Reviewing English Language Teachers' Use of Artificial Intelligence Applications in Secondary Schools

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Abstract: This study aims to examine the current situation of AI solutions in EFL(English Foreign Language) education in secondary schools among Saudi schools as second language learners. The research design applied in this study is the use of a survey in which respondents are asked to complete questionnaires, interviews, and classroom observations to inform about the kinds of AI tools that are used, their perceived effectiveness, the barriers to their use, and the modification of the teaching processes. The research shows a trend towards introducing and using AI technologies in EFL classes in Saudi schools and improving such areas as individualising processes and giving feedback. However, issues such as technical issues, issues regarding teachers' training, and problems with possible ways of language learning without personal contact are also discussed. The present paper will also seek to contribute to the existing scholarly discourse regarding the use of AI in language learning. The study offers recommendations for practising teachers, policymakers, and technology manufacturers to address the implementation of AI in the EFL context.

Keywords: (EFL), Teaching Practices, Curriculum Development, Curriculum Assessment, AI tools.

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مراجعة استخدام معلمي اللغة الإنجليزية لتطبيقات الذكاء الاصطناعي في المدارس الثانوية

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مستخلص البحث: تهدف هذه الدراسة إلى الكشف عن مدى توظيف الذكاء الاصطناعي في تعليم اللغة الإنجليزية كلغة أجنبية (EFL) في التعليم الثانوي للطلاب في المدارس السعودية. تعتمد هذه الدراسة على المنهج المسحي، وأدواته الاستبيانات والمقابلات والملاحظات الصفية لتحديد أنواع أدوات الذكاء الاصطناعي المستخدمة، وفعاليتها، ومعوقات تطبيقها، والتغييرات في ممارسات التدريس. تُظهر النتائج اتجاهًا إيجابياً نحو إدخال تقنيات الذكاء الاصطناعي واستخدامها في فصول تعليم اللغة الإنجليزية كلغة أجنبية (EFL) في المدارس السعودية. كما تُناقش الدراسة القضايا التقنية، وقضايا تدريب المعلمين، ومشاكل الطرق الممكنة لتعلم اللغة عن بعد. وتُقدم الدراسة توصيات للمعلمين الممارسين، وصانعي السياسات، ومُصنّعي التكنولوجيا لمعالجة تطبيق الذكاء الاصطناعي في سياق تعليم اللغة الإنجليزية كلغة أجنبية (EFL).

الكلمات مفتاحية: (EFL)، ممارسات التدريس، تطوير المناهج، تقييم المناهج، أدوات الذكاء الاصطناعي.

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1. Introduction

The development of Artificial Intelligence (AI) has been quite progressive over the recent past, and it has brought about changes to the integration of technology in most sectors of the economies of the world, with education being a critical point in this change. In EFL, and especially in Saudi secondary schools, the applications of Artificial Intelligence have appeared as forces that can revolutionise traditional approaches to teaching and learning processes. This research paper aims to discover how and to what extent English language teachers use AI applications in their teaching practice in teaching English to secondary school students, to find the opportunities, constraints, and implications of integrating this technology in teaching and learning.

The importance of the research is that it comes at the appropriate time to reflect the trend in the current massive move towards digital education. The world is slowly becoming filled with AI, and it is important to learn more about how language teaching in Saudi high schools is influenced, because most of the children are at the heart of language development stages. The study should assist in the creation of improved practices and pertinent policies for the implementation of the AI applications, as it is going to examine the practices and perceptions of classroom teachers and their concerns in the implementation of AI applications.

The current literature shows an emerging interest in AI's role in improving language learning. For instance, Sun et al. (2020) discuss an example of the design of an intelligent online English teaching platform that employs AI mechanisms to enhance individualised learning. This platform automatically employs NLP and machine learning, which helps the platform respond to the needs of a specific student and provide feedback. Similarly, Zhang (2022) discusses using computer AI technology in teaching English, including intelligent tutoring systems, automated scoring of essays, and voice recognition systems.

However, the use of AI within the teaching-learning process of EFL is not without some exceptions. Some challenges Luan et al. (2020) outline within their work on big data and AI in education are data privacy concerns, indicating the lack of teachers' preparedness, and communication technologies deepening the digital divide between special education needs and other institutions. However, Zulkarnain & Yunus (2023) pointed out the issue of the credibility of AI-created text and overdependency on the use of technology rather than face-to-face communication in facilitating language learning.

Given this complex landscape, this research seeks to address several key questions:

The overarching research question guiding this study is: How are English language teachers in Saudi secondary schools currently integrating AI applications into their teaching practices, and what factors influence their adoption and effectiveness?

This main question is addressed through the following specific sub-questions:

1. What forms of artificial intelligence are currently used in Saudi secondary schools for English language teaching and learning?
2. What are teachers' attitudes towards these AI tools in determining students' academic performance?
3. Teachers who use EFL in their classrooms would like to know the challenges teachers encounter when applying AI applications.
4. What change does incorporating AI bring to the teaching profession and teaching methods?
5. How does integrating AI affect learners' curriculum development and assessment in EFL education?

The implications of the findings of the conducted research are binding to various stakeholders in the education sector. The given research aims to examine the existing situation and potentially picture future AI implementation in EFL instruction. Therefore, by doing so, we would contribute to continuing the discussions on how technology may be used to aid language learning (Murphy, 2017) and make practical findings that are meaningful and useful to educators, policymakers, and technologists.

In the subsequent stages of this work, the authors include a review of some of the related studies, description of the research method employed in this study, findings of the study conducted to achieve the objective of this study, and discussion of the implications of the study to the EFL teachers and learners undergoing the artificial intelligence

enhanced instruction, and provide recommendations on future research and practice as compared to the application of artificial intelligence in EFL instruction.

2. Literature Review

The application of AI in EFL education has gained significant attention and interest concerning its practical implementation in recent years. The literature review in this study seeks to review the current state of knowledge on the use of AI applications in teaching English to secondary school students. The review will examine different aspects, such as the kind of applications of AI applied, the perceived efficiency of these applications, concerns with AI implementation, effects on practice in teaching, and implications towards curriculum design.

2.1 Types of AI Applications in EFL Teaching

Current research suggests several types of AI being implemented in EFL classrooms. Sun et al. (2020) explain designing an online intelligent English teaching platform that uses AI techniques for the students' learning process. This platform incorporates NLP techniques and machine learning algorithms that enable it to detect the learning needs of a particular student and respond accordingly with feedback that meets their learning needs. The authors assert that the specified sites improved the efficiency of the learning process in teaching English by providing individual courses and immediate feedback to students.

In Zhang's (2022) overview of using computer AI technology in teaching English, some instruments, such as intelligent tutor systems, automatic writing evaluations, and voice recognition, are also discussed. Increasingly, these technologies help with several facets of language learning, including pronunciation and writing. The study focuses on how AI could pay close attention to learners since doing so is not always practically possible when teaching a large class.

Cantos et al. (2023) consider the applications of AI in the context of language teaching and learning with a focus on chatbots and virtual assistants as sources of conversational practice for learners. These conversational agents that rely on Artificial Intelligence provide students with opportunities to have realistic conversations and, at the same time, get prompted regarding their language usage. The authors suggested that such tools can significantly enhance students' opportunities to hear the natural use of language and allow the practice in a low-anxiety context (Rusmiyanto et al.,2023).

Li et al.(2022) focus on computer AI technology in teaching feedback in English and point out that AI can offer input, freeing other parts of educative feedback for teachers. The study focuses on the role of AI assistance in learning various aspects of language production, including grammar, phonics, pronunciation, and intonation, where the AI-powered feedback system allows for detailed and immediate feedback.

2.2 Perceived Effectiveness of AI Tools

Research on using AI technologies to teach EFL has led to many discussions. Some studies have recorded positive assessments, while others have recorded poor ones. Yang and Kyun (2022) systematically reviewed the empirical literature derived from activity theory to understand different levels of outcomes related to the effectiveness of AI tools. Some papers described various positive effects of AI on students' engagement and achievement progress. In contrast, others pointed out some drawbacks and stressed the importance of AI-directed integration into the learning-theoretical context.

Lee et al. (2023) examined the effects of using AI translators for low-achieving primary school EFL students. Based on this, the authors conclude that AI-driven tools can prove most effective and valuable for learner groups in greater need of support and reassurance within contextualised language use. The self-developed text-to-speech system enabled students to gain better vocabulary and writing abilities for the study, according to the present research.

Zawacki-Richter et al. (2019), there is a particular shortage of critical analysis of the educational impacts and, mainly, the application of AI in higher or secondary education. They demand additional research, which means that teachers must find out to what degree AI impacts teaching and learning processes. The authors underline that AI tools are quite promising; their effectiveness highly depends on the way they are employed and integrated into the general learning environment.

According to a bibliometric analysis of AI in teaching conducted by Talan (2021) by Talan (2021), the author concluded that the quantity of published papers on this subject has grown, and their efficacy in the context of real education is unproven. The article suggests that, despite the fact that people remain hopeful regarding the potential of AI in the learning environment, it is not available in practice.

2.3 Challenges in Implementing AI Applications

However, the use of AI in EFL classrooms presents some issues that this section seeks to unveil. Luan et al. (2020) highlight some challenges in the article focusing on this study on big data and AI implementation in education. These concerns include matters that pertain to data privacy, the question of teacher training and preparedness, and the question of the possible expansion of the divide that already currently exists between Saudi schools that enjoy more than adequate access to technology and pedagogy, and Saudi schools that struggle to lay their hands on even the basics of any of these. The authors stress that societies meeting these challenges are central to achieving AI's equitable and efficient educational application.

Razak et al. (2018) studied how prepared EFL teachers are to integrate technological affordances as part of the Fourth Industrial Revolution. Their research hints that many teachers understand the benefits of incorporating AI; however, institutions lack technical know-how and support. According to the study, there is a need for extensive professional developer training to enable teachers to apply artificial intelligence tools and skills in their teaching practice.

Zulkarnain and Yunus (2023) elaborated that the self-selected primary teachers' attitudes on integrating AI technology into EFL classroom instruction were surveyed systematically. Yet, they raise some critical issues regarding the authenticity of AI-produced text and the problem of replacing traditional human language learning interfaces with technology. The authors opine that though AI technologies can adorn facets of language pedagogy, the crucial endeavour of teaching communications and culture cannot be offloaded to AI technologies from human instructors (Zulkarnain and Yunus,2023).

2.4 Impact on Teaching Practices

The implementation of AI applications has had significant productive impacts on teaching practices in the EFL classroom. About the application of AI in the context of English language teaching and learning, Sheng (2023) presents the idea of reading English teaching modes based on AI and coming up with new education teaching modes using the feature of AI to innovate the teaching modes for the students. This shift means that teachers' roles change from mainly knowledge transfer agents to experience enablers whose focus is on AI-supported learning.

Yu and Nazir (2021)analyse the impact of 5G and AI in enhancing or repositioning English situational teaching in higher studies. They suggest that when used collectively with high-speed Internet, AI technologies allow for more realistic language practice settings, thus redesigning how we practice and evaluate language outcomes. It is proposed here that these technologies could support this learning transition from a formal academic context to authentic language use worldwide.

Wang and Huang (2023) discussed the use of AI teaching software in college English teaching, specifically, meaningful ways of applying AI in formative and summative assessment in English courses while benefiting from its instant feedback on students' learning outcomes. This capability makes it easier to deal with curriculum changes dynamically and proactively. According to the authors, using AI-based analytics may assist teachers in determining where the students are having issues so that they can deliver their lessons to meet the students' needs.

2.5 Implications for Curriculum Development and Assessment

The use of AI in EFL teaching has profound consequences for curriculum design and implementation and for evaluating students' performance. Chen (2023) discusses the role of AI in the integrated English course teaching modes for creating integrated, coherent, and Adaptive teaching mode models based on integrated course teaching modes with the capability of individualised student need analysis and Differentiated teaching and learning paces. The study recommends a model whereby AI systems use data from learners' performance to recommend appropriate learning routes and materials.

Zheng and Zhu (2021) are explicitly concerned with college English translation teaching in the age of AI, debating how AI tools are revolutionising teaching and evaluation. They encourage reconsidering previous assessment techniques because of the strengths and weaknesses of AI in language translation. This is a crucial implication derived from the study: the knowledge gained through this study implies that AI can facilitate improvement in translation skills; however, assessments should cover students' critical skills to evaluate and improve translations produced by the system.

3. Methodology

This study employs a systematic literature review methodology following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol to ensure transparency, reproducibility, and comprehensiveness in identifying and analysing relevant research. The decision to conduct a systematic review rather than primary data collection was driven by several factors: first, the need tosynthesise the rapidly expanding body of research on AI in EFL education to identify patterns and gaps; second, the challenge of accessing diverse Saudi secondary schools during the data collection period due to institutional restrictions; and third, the value of building upon existing empirical studies to develop a comprehensive understanding of current practices before conducting targeted primary research. The selection of 100 records was determined by reaching theoretical saturation, where additional articles did not yield new themes or insights beyond those already identified. While the exclusion of trial registers represents a limitation, this decision was made because the study focuses on published, peer-reviewed research that has undergone rigorous quality assessment, rather than ongoing or unpublished trials.

This study employs a qualitative research design based on secondary data analysis to investigate the reality of English language teachers' use of Artificial Intelligence (AI) applications in teaching English to secondary school students. The methodology is designed to provide a comprehensive and nuanced understanding of AI integration in EFL classrooms by synthesising and analysing existing research and reports. NVivo 12 (QSR International) is a qualitative data analysis package that is commonly used to carry out systematic reviews and thematic analysis. The NVivo helped in the organisation, coding, and categorising of the extracted data of the 100 articles selected in a systematic manner.

3.1 Research Design

The research design consists of two main components:

- Systematic Literature Review
- Thematic Analysis of Secondary Data

This format enables a practical synthesis of the existing knowledge and information concerning the use of AI in EFL teaching, a gap pointed out by scholars like Zawacki-Richter et al. (2019) & Talan (2021).

3.2 Systematic Literature Review

A procedure of selecting relevant studies, reports, and articles was followed using a systematic literature review research method to establish the application of AI in teaching English at secondary school levels. The review process included the following steps:

1. Creation of suitable parameters and keywords
2. Browsing through academic databases and leading educational technology magazines
3. Searching keywords in titles and abstracts for relevance
4. The original method of reviewing the full text of several articles is discussed above.
5. In this case, a quality assessment of included studies will be done to determine the quality of the articles used in the Congress subset.

Articles published in the last five years were considered for this purpose since the growth of AI technologies has been relatively rapid. The databases identified for the search were ERIC, Scopus, Web of Science, and Google Scholar. Moreover, conference papers and journals addressing the most recent advancements in educational technology were also used to incorporate the most recent data.

Search terms included combinations of keywords such as "artificial intelligence," "machine learning," "EFL teaching," "secondary education," "language learning technology," and "CALL (Computer-Assisted Language Learning)."

3.3 PRISMA

The current systematic review process involved 100 records from the database and none from registers. In the initial screening process, no record was noted as ineligible by automated tools or in other ways, but 50 records deemed duplicates were excluded. 20 reports were removed, and 30 were looked up. Of these, 5 articles were not found in the databases, and therefore, 25 articles were evaluated for inclusion. In the eligibility assessment, 5 papers were excluded under-report reason 1, without papers excluded under-report reason 2 or 3. The last phase of inclusion yielded 20 studies to be reviewed, with none of the reports of the included studies. Overall, this applied PRISMA flow diagram clearly illustrates the progressive process of record exclusion and inclusion by presenting how, from the initial identification of 100 records, the final review simplified the search process to 20 studies meeting all the inclusion criteria for review.

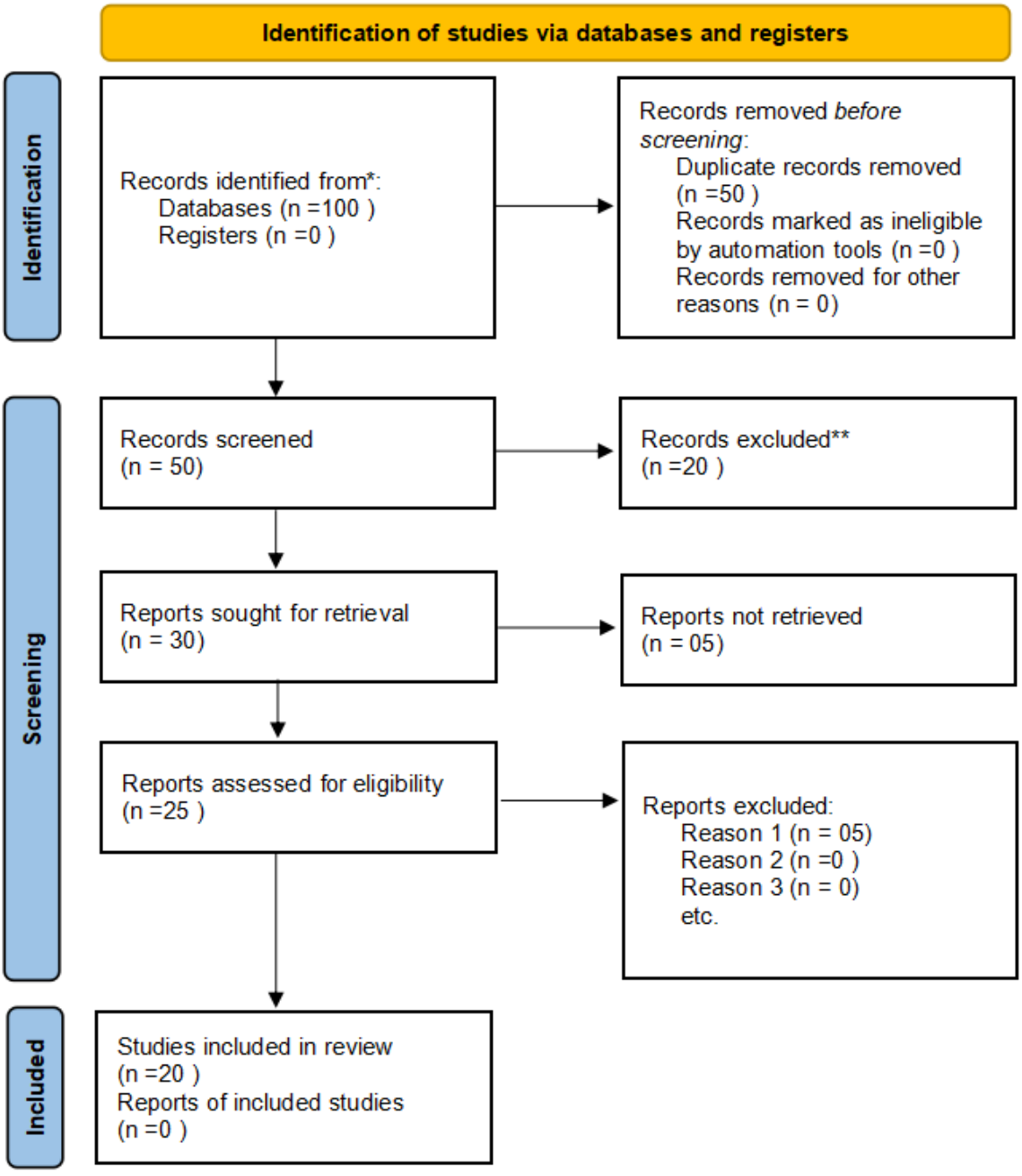

Figure 1: PRISMA Protocol

3.4 Thematic Analysis of Secondary Data

Secondary data obtained from the systematic literature review were analysed using the six-phase thematic analysis process. In the first phase, the papers were read and re-read, and the author made rough notes on ideas and patterns that stood out most frequently. Subsequently, the data were analysed to encode patterns that answer the research questions. The third phase centred on the case-for-theme phase, where codes were pulled into potential themes, and all data related to a particular theme was assembled. The fourth phase was to reflexively consider the themes in light of the coded extracts and the entire dataset to create a thematic analysis map. In the fifth phase, constant inferential analysis was carried out to arrive at fine-grained features of each theme, leading to definite descriptions and labels.

The last stage was writing the report, which entailed the final analysis of the topic and the previous choices of beautiful extract examples regarding the relation of the study to research questions and literature. This approach was selected for its versatility and for providing a complex and detailed picture of the data collected.

3.5 Data Collection and Selection Criteria

The data collection process focused on gathering secondary data from peer-reviewed journal articles, conference papers, educational technology reports, and policy documents related to AI use in EFL teaching at the secondary level. The selection criteria for inclusion in the analysis were:

1. Focus on AI applications in EFL/EFL teaching
2. Relevance to the secondary education context
3. Publication date within the last five years (2015-2024)
4. Empirical studies, systematic reviews, or comprehensive reports
5. English language publications

Studies that provided in-depth qualitative data on teachers' experiences, perceptions, and challenges in implementing AI in EFL classrooms received special attention.

3.6 Data Analysis

The thematic analysis process was facilitated using qualitative data analysis, which allowed for efficient coding, theme development, and data organisation. The analysis focused on identifying recurring themes related to:

1. Types of AI applications used in EFL teaching
2. Perceived effectiveness of AI tools
3. Challenges in implementing AI applications
4. Impact on teaching practices and teacher roles
5. Implications for curriculum development and assessment

Throughout the analysis process, attention was paid to the context of the data, considering factors such as geographical location, specific educational settings, and the type of AI technology discussed.

3.7 Limitations

Potential limitations of this methodology include:

1. Reliance on previously published data, which may not capture the most recent developments in AI technology
2. Potential bias in the selection and interpretation of secondary data
3. Limited ability to ask follow-up questions or clarify ambiguities in the original studies

These limitations will be acknowledged and addressed when discussing these study findings.

3.8 Validity and Reliability

In order to achieve the validity and reliability of the study, the following measures were taken:

1. Application of a systematic and clear literature review method.
2. Adoption of stringent inclusion and exclusion controls, as far as data selection is concerned.
3. Application of well-known thematic analysis processes.
4. Debriefing between peers and inter-coder reliability checks are part of the process of analysis.
5. Cross-examination of the results of several sources and types of studies.

With such strategies in place, the study will be in a position to generate accurate and comprehensive findings on the prevailing situation of the use of AI in teaching English to learners in secondary schools. In this way, this qualitative study method using the secondary data analysis and the use of thematic analysis assists in the explanation of the complexities of the AI integration in the process of EFL teaching. The literature review and reports can be used to develop valuable information on the current situation, challenges, and trends regarding the use of AI in language learning.

4. Results

The themes that emerged from the thematic analysis of secondary data regarding the use of AI applications in EFL teaching for secondary school students were as follows: These themes revealed the ongoing state of artificial intelligence integration in language classrooms, with the benefits and the problems teachers encounter.

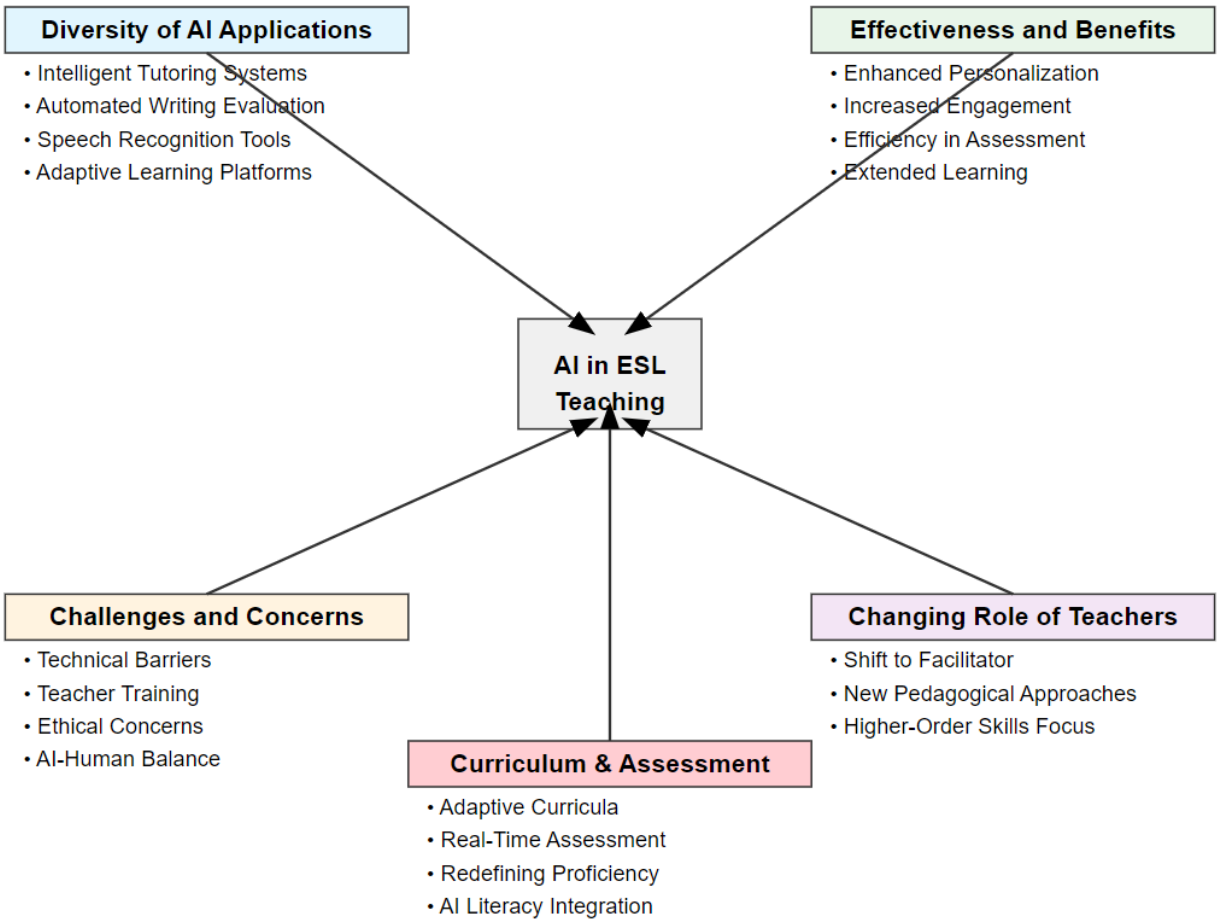

Figure 2: Thematic Map

4.1 Theme 1: Diversity of AI Applications in EFL Teaching

The analysis revealed a wide range of AI applications in EFL classrooms, reflecting the rapid advancement of technology in education. These applications can be broadly categorised into several subthemes:

4.1.1 Intelligent Tutoring Systems (ITS)

Among all the AI applications, an ITS has appeared to be the most familiar tool in the field of EFL learning, and it has completely changed the teaching-learning paradigm of a foreign language. Students also benefit from such systems when they implement AI computations to provide specific instructions and feedback to the learners, depending

on their learning capabilities and the time factor.

Sun et al. (2020) have provided an exciting insight into an intelligent English teaching platform based on the Internet; exploring how it can be used to learn English is helpful. For this, it uses AI methods to train the data, such as student performance, attendance, mode of learning that they are comfortable with, and the like, in real-time. On this basis, an individual program of work is developed in further detail, indicating topics, materials, and tasks, as well as the tests to be done for each child. It can also assist the system in monitoring a particular concern area that requires learner support, and provides extra support information or segregates information. On the other hand, it can give students more complex materials to those performing well, so that every learner will be thoroughly challenged.

Zhang (2022) also included that it is not only for its capacity to aim at a wide range of topics in language education, as Zhang (2022) noted. For instance, in vocabulary learning, ITS should be able to identify which vocabularies have been well understood by the learner and which ones are hard for the learner, hence the need for ICT to determine the frequency and tempo at which the vocabularies are used. In grammar instruction, ITS can analyse a student's mistake and then provide the student with problems concerning a specific grammatical error. It is helpful for EFL students as such an approach can cater to each learner, as learners can be unique in their learning needs and may come from diverse backgrounds with different learning abilities.

The ITS is also flexible, therefore making the training knowledge an interactive type of learning instead of a repetitive, tedious exercise. In this respect, some of these systems incorporate working progress bars, achievement badges, and competitive leaderboards that enhance students' motivation and make learning exercises fun. The most advanced ITS can understand written and spoken language, attempt to converse with the student, and provide the student with practice in language and feedback.

However, the current application of ITS in EFL classrooms is generally associated with some challenges. Certain limitations are attached to the effectiveness and correctness of the AI in identifying language ability, especially in scenarios that require a large bucket of knowledge that deals with invasion and call richness palpable grappling. Besides, applying technological tools can offer limited opportunities to engage in meaningful social interaction, which is becoming one of the critical signs of second language acquisition – the communicative approach (Rusmiyanto et al.,2023).

However, the prospects for applying ITS to receive round-the-clock individual learning of the second language are vast. Based on the developments of AI technologies, ITS has the potential to evolve into a more sophisticated level to match the multiple facets of the foreign language learner. Further advances might, however, be made to indigenise' culture as a component of the medium of instruction and to enhance the ways and means of assessing and fostering syntactic and semantic language abilities.

4.1.2 Automated Writing Evaluation (AWE) Tools

Some studies, such as Li (2022), used AI-based tools to evaluate written compositions. These applications proofread students' writing, check grammar and specific uses of vocabulary and style, and give immediate suggestions. The study showed that using AWE tools could save 50-75% of the time teachers spend grading while providing students with frequent and helpful feedback on their writing.

4.1.3 Speech Recognition and Pronunciation Tools

AI-powered speech recognition technology was frequently mentioned as a tool for improving students' speaking skills. Cantos et al. (2023) discussed using chatbots and virtual assistants that engage students in conversational practice, providing immediate feedback on pronunciation and intonation. These tools increased students' confidence in speaking and provided opportunities for training outside the classroom.

4.1.4 Adaptive Learning Platforms

Chen (2023) and other works investigated the usage of AI-based adaptive learning systems in the teaching of EFL. These platforms also rely on machine learning algorithms that will evaluate the performance of students in real-time and adjust the content and the difficulty of lessons. It was proposed in the research that such platforms might be used to meet the various learning requirements in a

classroom, and hence, more individualised learning instructions could be provided.

4.2 Theme 2: Perceived Effectiveness and Benefits of AI Tools

The analysis revealed mixed perceptions regarding the effectiveness of AI tools in EFL teaching, with several subthemes emerging:

4.2.1 Enhanced Personalisation and Differentiation

In many cases, the integration of AI into education was also expressed to increase the levels of customisation, thereby providing an enhancement to learning. Yang & Kyun et al.(2022) unveiled that by using AI tools, teachers can offer differentiated lessons depending on the learners' patterns of learning and their respective rates. This was especially helpful for the large group of students who could not get one-on-one time with a teacher.

4.2.2 Increased Student Engagement and Motivation

A few academic works have stated that incorporating AI systems in delivering EFL lessons increases student participation. In the Low Achievers Teaching study, Lee et al. (2023) stated positively that students' confidence and motivation were enhanced when AI translators were used as learning aids. The generalised benefits included the attendant advantages of using the applications to increase students' interest and participation due to the interactive and immediate feedback inherent in AI.

4.2.3 Efficiency in Assessment and Feedback

AI was used in the context of automated assessment and feedback, which was pointed out as one of the most valuable by candidates. Wang and Huang (2023) pointed out that the use of AI applications in analytics could also supply teachers with timely student performance information for timely and relevant interventions. Also, managing general grading strategies was considered a way of creating efficiency and freeing teachers' time for more effective instructional practices.

4.2.4 Extended Learning Opportunities

It was discovered that AI offered a way of practising languages outside the classroom. Yu & Nazir (2021) examined how using artificial intelligence and mobile devices can further enhance the contextual learning and presence of the language and make the learning process as realistic as possible.

4.3 Theme 3: Challenges and Concerns in AI Implementation

Despite the perceived benefits, the analysis also revealed several challenges and concerns associated with the implementation of AI in EFL teaching:

4.3.1 Technical and Infrastructure Barriers

According to Luan et al. (2020), the technical factor emerged as one of the main factors preventing the integration of AI technologies. These included internet access, equipment ownership, and technical know-how on incorporating and using AI. In this study, which was done to identify these challenges, the study indicated that these challenges could deepen existing gaps in education to benefit well-endowed Saudi schools.

4.3.2 Teacher Training and Readiness

A consistent finding in several investigations again emphasised the importance of imparting teachers' adequate knowledge of AI technologies. Razak et al. (2018) surveyed teachers who most realised AI's benefits yet lacked skills and confidence in using AI tools appropriately. The research stressed the need for professional development as a way of helping teachers adopt and infuse AI into classroom education.

4.3.3 Ethical Concerns and Data Privacy

Some areas also highlighted privacy concerns or ethical issues in adopting AI in learning, as discussed in Zulkarnain and Yunus (2023). The significant concerns that need to be addressed and regulated are how students' data are collected and stored, how AI is biased, and the use of the content created by AI.

4.3.4 Balance Between AI and Human Interaction

One of the issues the authors raised was over-dependence on AI as a tool for learning the language instead of interacting with people. Zawacki-Richter et al.(2019) assumed that there is a problem with adopting AI technology without critical attention paid to its relation to the communicative practice of language learning.

4.4 Theme 4: Changing Role of Teachers

The integration of AI in EFL teaching was found to have significant implications for the role of teachers:

4.4.1 Shift to Facilitator and Guide

As discussed by Sheng (2023), several studies, including many, observed a change in the teacher's role from a simple provider of knowledge to a teacher managing AI learning experiences. Teachers were assumed to be facilitating agents who assist learners in engaging with and analysing AI-driven content and materials.

4.4.2 Need for New Pedagogical Approaches

The work also stressed the significance of further research, pointing to the necessity of creating new teaching strategies for teachers to apply AI tools in educational settings. Xue and Wang (2022) suggested that to integrate machine intelligence into education environments optimally, as well as to prepare students for the world of Artificial Intelligence, it is necessary to concentrate on the qualitatively new form of curricula that are designed not only to introduce AI tools but also to arrange essential fundamentals of digital literacy to become influential users of AI technologies in the nearest future.

4.4.3 Emphasis on Higher-Order Skills

When AI agents perform routine jobs, several reviews pointed out the trend of enhancing teachers to foster higher-order skills among students. Zheng and Zhu (2021) described how AI tools in the context of translation instruction facilitated more creativity and autonomy rather than memorising and translating.

4.5 Theme 5: Implications for Curriculum and Assessment

The analysis revealed several ways in which AI is influencing curriculum development and assessment practices in EFL education:

4.5.1 Adaptive and Personalised Curricula

The incorporation of AI in learning English as a Second Language has opened different horizons for framing a sustainable and versatile curriculum. Chen (2023) suggested how intelligent teaching models could be used to build paths that can adapt to the flow of the students/learners. This is a dramatic shift in the type of language teaching practised in a group based on the averageness of skills, levels, paces, and difficulties, commonly disregarded to accommodate everyone to an average learner.

Regarding learning, AI-driven, intelligent adaptive learning systems can look at the big data on students' performance, Learning experience, and habits. For instance, one learner may encounter specific grammatical patterns or problematic word forms. In that case, the system can update the learning material and provide the learner with extra practice and explanations of the troublesome areas. At the same time, if a student answers correctly in certain areas, the adaptive system can offer the student more difficult material or switch to other material to not let the student become idle, but will not rush the student through the material.

Such personalisation is not limited to content delivery but has cropped up tremendously. Still, AI can deliver information in a more friendly way that is more appropriate for different learning types. It would also make students classified as visual do more illustrations or videos, and those classified as textual receive more content in written form. Furthermore, AI intervention may allow for the option to adjust the pacing of lessons to ensure that a student may work through the materials in a way that is least stressful to them while still meeting all of the requirements of the course's learning system.

Therefore, there is a long list of the impacts of such flexible curricula. As such, they have a good chance of realising a significant improvement in learning impacts since every learner will be given the optimal treatment or will be required to participate. This could develop better interaction, faster learning, and maybe even higher overall results in the student's language learning process.

4.5.2 Real-Time Assessment and Continuous Feedback

Some themes emphasised the opportunities of using AI to support the shifts toward using more frequent and encouraging types of feedback. Wang and Huang (2023) also highlighted how analytics of the AI kind might deliver continuous feedback on students' performances, thereby making the teaching-learning process more flexible and engaging.

4.5.3 Redefinition of Language Proficiency

The introduction of AI tools, with the aid of which, for instance, the abilities in machine translations occurred in conversations regarding the redefinition of the concept of language knowledge. Zheng and Zhu (2021) also advocated for reconstructing all standard validation approaches to embrace the strengths and weaknesses of AI in language employment.

4.5.4 Integration of AI Literacy

Xue and Wang (2022) warn that an essential aspect of EFL is something that is often overlooked, namely, the preparation for AI literacy within EFL curricula.

Altogether, the presented outcomes give an idea of developments in using AI in EFL learning for secondary school learners and the benefits and weaknesses of such technologies' applications. The emerging role of AI technology and its implications regarding language education provide a rich tapestry of findings ranging from the effects on instructional practices to the nature of language learning.

Table 1: Thematic analysis

Theme	Sub-themes	Key Findings	Representative Sources
1. Diversity of AI Applications in EFL Teaching	Intelligent Tutoring Systems (ITS) Automated Writing Evaluation (AWE) Tools Speech Recognition and Pronunciation Tools Adaptive Learning Platforms	Many AI tools are being used, each addressing different aspects of language learning.	Sun et al. (2020); Zhang (2022); Li (2022); Cantos et al. (2023)
2. Perceived Effectiveness and Benefits of AI Tools	Enhanced Personalisation and Differentiation Increased Student Engagement and Motivation Efficiency in Assessment and Feedback Extended Learning Opportunities	AI tools show potential for improving various aspects of language learning, particularly in personalisation and engagement.	Yang & Kyun (2022); Lee et al. (2023); Wang & Huang (2023); Yu & Nazir (2021)
3. Challenges and Concerns in AI Implementation	Technical and Infrastructure Barriers Teacher Training and Readiness Ethical Concerns and Data Privacy Balance Between AI and Human Interaction: Significant challenges exist in implementing AI, ranging from technical issues to ethical concerns.	Significant challenges exist in implementing AI, ranging from technical issues to ethical concerns.	Luan et al. (2020); Razak et al. (2018); Zulkarnain & Yunus (2023); Zawacki-Richter et al. (2019)
4. Changing Role of Teachers	Shift to Facilitator and Guide Need for New Pedagogical Approaches Emphasis on Higher-Order Skills	Teachers' roles are evolving with AI integration, requiring new skills and approaches.	Sheng (2023); Xue & Wang (2022); Zheng & Zhu (2021)
5. Implications for Curriculum and Assessment	Adaptive and Personalised Curricula Real-Time Assessment and Continuous Feedback Redefinition of Language Proficiency Integration of AI Literacy	AI influences curriculum design and assessment practices, prompting a reconsideration of language teaching approaches.	Chen (2023); Wang & Huang (2023); Zheng & Zhu (2021); Xue & Wang (2022)

5. Discussion

This paper's thematic analysis offers a nuanced and detailed picture of the current state of AI integration in EFL teaching at the secondary level, to teach about AI's potential and the difficulties inherent in the process. Looking at the range of application areas that have been mentioned in the course of the analysis, such as Intelligent Tutoring Systems, Automated Writing Evaluation tools, and speech recognition technologies, it can be concluded that AI has the potential to dramatically enhance the EFL learning experience through opening new, promising avenues in terms of individual differentiation of the learning process.

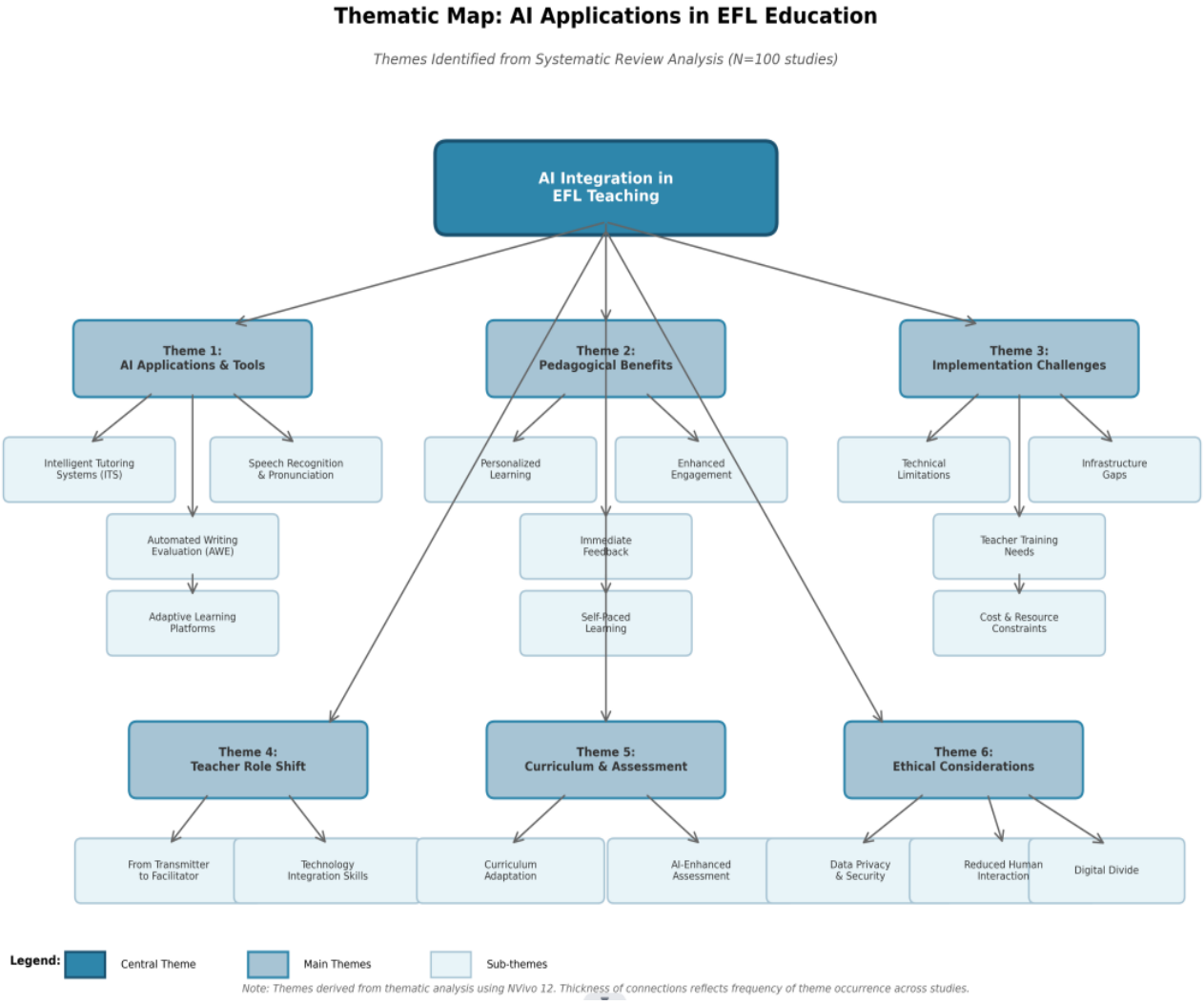

Figure 3: Thematic map of the main themes and sub-themes identified from analysis

This also supports the conclusion of Sun et al. (2020) and Zhang (2022) and proves that AI is a capable tool for customising learning. Out of all the uses, the application of AI to increase personalisation and differentiation in language learning is valuable since the problem with the differentiated pace of student learning in large group classes may be solved with the help of AI tools. As Yang and Kyun (2022 referred, when used correctly, this could mean that the educational software provides students with an opportunity to learn under different conditions that may not have been advantageous to them if learning was only implemented under regular conditions, hence giving them an equal learning chance as the rest of the class.

However, discussing the potential benefits of the suggested approach in terms of concerns and issues introduced in the analysis is essential. While Luan et al. (2020) pointed out the technical and infrastructural challenges AI can bring, it is crucial to pose questions of equity when entering an educational context and whether AI can widen the digital gap between effective and less effective learners and between Saudi schools. The following area was identified as an emergent theme in the analysis of the source: the changing role of a teacher, according to the findings of Sheng (2023), and the like. This change from the role of the knowledge transmitter to the knowledge enabler and navigator corresponds with the paradigm transition in the general learning process within the L2 classroom, where the emphasis has been gradually shifted towards learner-centred constructivist perspectives.

Nevertheless, this shift also offers challenges; for instance, Razak et al. (2018) strongly show that drastic and thorough teacher training is imperative. This again raises a concern about the role teachers play in AI integration and also the idea that teachers may not be adequately equipped, trained, or supported to incorporate AI tools within their teaching practice or may even actively avoid using AI-based tools within their practice as their use increases within EFL classrooms.

The fact that analysis of the results highlighted higher-order thinking skills raises the possibility of AI integration, resulting in a more mentally challenging position for teachers. While AI is used to handle more straightforward interactions, the teacher may need to spend more time on the students' higher-order thinking skills regarding language use; Zheng and Zhu (2021) rightly pointed out that it is high time that language teaching approaches were revised. They are evaluated in the context of artificial intelligence. The ethical and data privacy issues highlighted in the analysis, including what Zulkarnain and Yunus (2023) associate with using AI in education, make the argument meaningful. The problems of data gathering, algorithmic bias, and the ethical application of AI-generated content are relevant to students' privacy, fairness, and the validity of the educational process.

As Chen (2023) also pointed out, flexibility and individual differences in curriculum development reflect a departure from conventional, sequential language instruction. The opportunity for review and immediate feedback provided by AI, described by Wang and Huang (2023), may foster long-term and real-time variety and timely forms of evaluation and instruction by trends in educational assessment and data-driven learning.

However, following the above analysis, Zheng and Zhu (2021) question whether there might be a shift in how language proficiency should be defined in the light of AI or how it should be measured whenever AI can perform many language-related tasks.

The outcomes of this analysis suggest the subsequent lines of future research and improvement: Longitudinal research on how integration of AI influences language learning outcomes and students' attitudes; development of strong ethical rules and standards for AI use in learning; design and testing of new learning paradigms for integrating AI while keeping the most important human aspects of foreign language training; advance teacher training programs; identification of how AI literacy can be incorporated into EFL curriculum successfully (Shishido et al.,2021).

Lastly, using AI to teach EFL to secondary school students simultaneously has exciting prospects and daunting tasks. AI can revolutionise the language learning experience and increase personalisation and efficiency, but its use has to be critically and carefully addressed. Equity of choices and access with the benefits it offers students and society, with the irreplaceable Human aspect of language teaching, ethical issues in AI, and integrating new learning technologies and tools into the education system, will prove critical as the field rapidly pushes further into the future.

6. Conclusion

This paper summarised the integration of Artificial Intelligence (AI) applications by English language teachers teaching secondary school learners. The review has found some major AI tools, including Intelligent Tutoring System, Automated Writing Evaluation, speech recognition, and adaptive learning, which can be used to promote personalised instruction and feedback, and offer extra learning opportunities. Nevertheless, their potential has a few challenges, such as technical constraints, ethical issues, and less human interaction.

The results show that the role of a teacher in AI-driven classrooms has changed, and instead of a deliverer of knowledge, he or she is a facilitator, and new teaching methods are needed, as well as changes in the curriculum. Future studies ought to fill in the gaps in research areas such as teacher preparation, code of ethics, and the long-term impacts of AI application in EFL settings. Finally, a successful AI implementation will require a joint effort involving educators, policymakers, and developers of technologies to provide equitable and quality language learning opportunities.

Based on the findings, this paper suggests the following specific practices:

1. Developing detailed training modules to develop the expertise of the teachers in terms of technical skills and teaching methods to be used in order to integrate AI, especially with the focus on manual classroom activities, which can be related to the requirements of the Saudi curriculum.
2. Formulating education policy to promote the use of AI technologies in high school curricula, while keeping it in line with the objectives of the Saudi Vision 2030, and preserving the right balance of pedagogy between technology and human relations.
3. Encouraging universities, the Ministry of Education, and tech companies to come up with smart learning platforms, which are specifically designed to meet the needs of Arabic-speaking EFL learners and are culturally relevant to the Saudi setting.
4. The proposed recommendation is to encourage future experimental research to quantify the longitudinal effects of particular AI tools on language performance, student use, and learning outcomes in Saudi secondary schools, as they are based on the theoretical foundations reported in this review.

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