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Adoption of Artificial Intelligence Technologies for Enhancing English Language Skills in Government Senior Secondary Schools: Opportunities, Challenges, and Implementation Strategies

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ABSTRACT

The integration of Artificial Intelligence (AI) technologies in education has opened new possibilities for enhancing teaching and learning practices, especially in the domain of language education. This study investigates the role of AI in improving English language skills among students in Government Senior Secondary Schools, where conventional instructional methods are often limited by inadequate resources, teacher shortages, and outdated pedagogy. AI-powered tools such as speech recognition systems, grammar correction software, adaptive learning platforms, and intelligent tutoring systems offer personalized, interactive, and student-cantered learning experiences. These tools not only enhance language acquisition but also support teachers in creating more effective and engaging classroom environments. Despite these advantages, several challenges hinder the successful adoption of AI, including inadequate digital infrastructure, limited teacher training, and lack of institutional readiness. This study aims to assess the feasibility, perceptions, and impact of AI integration in government schools, with a focus on identifying implementation barriers and proposing strategies for scalable and sustainable adoption. The findings of this research will offer valuable insights for educators, administrators, and policymakers in leveraging AI to enhance English language education and promote equity in public schooling systems.

Keywords: *AI in Education, English Language Learning, Government Schools.*

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I. INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has significantly transformed various sectors, including education. Among the most promising developments is the integration of AI technologies into teaching and learning practices. In the context of language education, particularly English—a global language of communication, business, and academia AI holds immense potential to address long-standing pedagogical challenges. This study explores the role of adopting AI technologies in enhancing English language skills among students in Government Senior Secondary Schools, where traditional methods often face constraints such as inadequate teacher training, lack of personalized learning, and limited access to updated resources. Government schools, especially in developing regions, often struggle with infrastructure deficits, large class sizes, and diverse student learning abilities. English, being a second or even third language for many students, is often taught through conventional grammar-translation methods that limit speaking, listening, and comprehension skills. AI-based tools such as intelligent tutoring systems, speech recognition apps, grammar checkers, language learning bots, and adaptive assessment platforms can provide innovative solutions to these issues. These tools not only offer real-time feedback and personalized learning paths but also encourage greater student engagement through interactive content [1].

The integration of AI in English teaching can bridge gaps in teacher competency and student proficiency. By automating routine tasks like grading and generating customized exercises, AI allows teachers to focus on more interactive and meaningful pedagogical practices. Moreover, AI can aid in developing critical 21st-century skills such as communication, collaboration, and digital literacy essential for global citizenship. However, the adoption of AI in government school settings is not without challenges. Factors such as digital infrastructure, teacher preparedness, resistance to change, and policy support play crucial roles in determining the success of such initiatives. It is essential to assess the readiness of educational institutions, the perceptions of teachers and students, and the effectiveness of AI-based interventions in actual classroom scenarios. This study aims to evaluate the current state of AI adoption in government senior secondary schools and its impact on the teaching of English language skills. It will also explore how AI tools are perceived by stakeholders, what barriers exist to their widespread use, and what best practices can be adopted to ensure successful implementation. Through this research, policymakers, educators, and technologists can gain insights into how AI can be harnessed to improve English education outcomes in public school systems, thereby contributing to more equitable and quality education [2-4].

1.1 Emergence of AI in Education and Language Learning

The emergence of Artificial Intelligence (AI) has brought a paradigm shift in the field of education, revolutionizing traditional teaching and learning processes. AI technologies have become integral in enhancing educational delivery, improving accessibility, and personalizing the learning experience. Among various domains within education, language learning particularly English has witnessed notable advancements through AI integration. English, being a global language and a vital skill for academic and professional growth, has become a key focus area for AI-enabled educational interventions. AI-driven tools such as intelligent tutoring systems, natural language processing

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(NLP), machine learning algorithms, and speech recognition software are reshaping how languages are taught and learned. These tools offer interactive learning environments, adaptive feedback, real-time error correction, and personalized content tailored to individual learner needs. Unlike traditional one-size-fits-all teaching methods, AI allows for differentiated instruction that considers each student's pace, proficiency level, and learning preferences.

In the context of English language education, AI applications can support all core language skills reading, writing, listening, and speaking. Language learning platforms equipped with AI can evaluate pronunciation, suggest grammar improvements, and engage learners in interactive dialogues. Such technologies are especially useful in addressing the limitations faced by under-resourced educational institutions, where qualified language teachers and updated materials may be lacking. Furthermore, AI has enabled data-driven insights into student performance, helping educators identify learning gaps and provide timely interventions. As digital learning continues to grow, AI stands out as a transformative force that enhances both teaching efficacy and student engagement. Its role in language education is not just supportive but increasingly central to pedagogical innovation. The emergence of AI in this field marks a shift towards more inclusive, efficient, and learner-cantered education, particularly crucial for public school systems striving to improve language proficiency and communication skills among students [5-8].

1.2 Challenges in Traditional English Language Teaching in Government Schools

Lack of Trained English Language Teachers: One of the most critical challenges faced by government senior secondary schools is the shortage of adequately trained English language teachers. Many teachers come from non-English-speaking backgrounds and lack proper pedagogical training in language instruction. This leads to a focus on rote learning, grammar-based instruction, and textbook-centered teaching, with minimal emphasis on communicative skills such as speaking, listening, and pronunciation. As a result, students often struggle to use English in real-life contexts, despite passing examinations.

Outdated Teaching Methods and Curriculum: Traditional English teaching in government schools largely relies on the grammar-translation method, where emphasis is placed on memorization, literal translation, and written exercises. These methods fail to engage students or build their confidence in using the language effectively. The absence of interactive or technology-supported teaching tools further limits the scope of experiential and personalized learning. In addition, the curriculum is often rigid and not aligned with modern linguistic trends or learners' real-world communication needs, making it less relevant and engaging.

Overcrowded Classrooms and Limited Infrastructure: Government schools frequently operate with high student-to-teacher ratios, especially in rural and semi-urban areas. Overcrowded classrooms make it difficult for teachers to provide individual attention or assess each student's progress accurately. Coupled with limited access to audio-visual aids, language labs, or digital platforms, this infrastructure gap severely impacts the development of essential English skills. Moreover, students from diverse socio-economic backgrounds often face challenges such as lack of

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parental support, exposure to English outside the classroom, and insufficient learning resources, which contribute to further disparities in language acquisition. Together, these challenges underscore the urgent need for innovative teaching approaches, such as the integration of AI technologies, to enhance the quality and effectiveness of English language education in government schools [9].

1.3 Potential of AI Tools to Enhance English Skills and Teacher Support

Personalized Learning and Skill Enhancement for Students: AI-powered tools such as intelligent tutoring systems, speech recognition software, and adaptive language learning platforms have the capability to tailor instruction to the unique needs of each student. These technologies analyse learner performance in real time and provide instant, individualized feedback on grammar, vocabulary, pronunciation, and sentence structure. For instance, AI chatbots and voice assistants can simulate real-life conversations, helping students improve their speaking and listening skills in a low-pressure environment. Adaptive learning systems adjust the difficulty level of tasks based on student progress, enabling continuous improvement and self-paced learning. This level of personalization is especially valuable in large government classrooms where individual attention from teachers is often limited.

Teacher Support and Instructional Efficiency: AI technologies not only assist students but also serve as a powerful aid for teachers. Automated assessment tools can evaluate writing assignments, provide grammar corrections, and track student progress efficiently, saving teachers time on routine tasks. This allows educators to focus more on facilitating group discussions, encouraging verbal communication, and addressing individual learning gaps. AI can also help identify trends in classroom performance through analytics, enabling data-driven decisions to refine lesson plans and intervention strategies. Moreover, teachers in government schools with limited professional training can benefit from AI-supported lesson planning and instructional suggestions. As a result, AI serves as both a teaching assistant and a professional development resource, helping teachers adopt more dynamic, student-cantered pedagogical practices. This dual role of AI enhances overall teaching effectiveness and ensures a more inclusive and impactful English language learning environment [10].

1.4 Need for Assessment of AI Integration and Institutional Readiness

The integration of Artificial Intelligence (AI) in English language teaching within government senior secondary schools requires a careful and systematic assessment of institutional readiness and implementation feasibility. While AI offers promising solutions to existing challenges in language education, its success greatly depends on the preparedness of schools, teachers, and policy frameworks to adopt and sustain such technologies.

One of the major concerns is the disparity in digital infrastructure across government schools. Many institutions, especially in rural and semi-urban areas, lack basic technological resources such as computers, stable internet connectivity, and smart classrooms. Without these foundational elements, the deployment of AI tools becomes impractical. Moreover, teachers may not possess the necessary digital literacy or training to effectively incorporate AI into their pedagogical practices. Professional development programs and continuous training are essential to equip educators with both technical and instructional competencies needed for AI-based teaching.

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Another critical aspect is policy support and administrative willingness to invest in and scale AI initiatives. The absence of clear guidelines, funding mechanisms, and monitoring frameworks can hinder the successful adoption of AI in public education. Therefore, a comprehensive evaluation of stakeholder perceptions including those of teachers, students, administrators, and policymakers is necessary to identify potential barriers and enablers. This study emphasizes the importance of assessing not only the technological readiness but also the socio-cultural acceptance of AI integration in government schools. Through understanding the ground realities, challenges, and expectations of those directly involved, effective strategies can be developed to ensure sustainable and meaningful implementation. The findings of this research can serve as a roadmap for educational planners and institutions to adopt AI technologies that enhance English language learning, bridge educational gaps, and promote equitable access to quality education across the public schooling system [11-14].

II. REVIEWS OF LITERATURE

Zhao et al. (2025) examined how advancements in AI technologies and supportive government policies had been accelerating educational reform in China, emphasizing the importance of identifying key factors influencing middle school teachers' adoption of AI in classroom instruction. The study, grounded in a structural equation model (SEM) framework, was reported to have integrated Innovation Diffusion Theory, the Technology Acceptance Model (TAM), and the Unified Theory of Acceptance and Use of Technology (UTAUT), proposing a structural model with ten latent variables. Each variable was said to be operationalized through a corresponding measurement model, forming the basis for a survey administered to 202 middle school teachers. The analysis was found to validate a well-fitting structural model. Findings had suggested that the most significant positive influences on teachers' willingness to adopt AI included Interpersonal Relationships, Innovativeness, Mass Media, Compatibility, Perceived Usefulness, and Perceived Ease of Use. In terms of actual usage behavior, factors such as teachers' willingness, Facilitating Conditions, Career Aspiration, and Perceived Usefulness were reportedly most impactful. The study was also noted to offer theoretical contributions, particularly regarding the role of Interpersonal Relationships, and had proposed practical strategies such as embedding social networks to support AI integration in education.

Sunday et al. (2025) had investigated teachers' perceptions regarding the integration of Artificial Intelligence (AI) tools in classroom instruction and their perceived impact on academic performance in secondary schools within Akwa Ibom State, Nigeria. Using a descriptive and correlational research design, the study had targeted a population of 7,200 teachers across Uyo, Ikot Ekpene, and Eket Senatorial Districts, from which a stratified and cluster sample of 600 teachers had been drawn to ensure representativeness. Data had been collected through two validated instruments the AII-CIQ and APIPS with reliability coefficients of 0.88 and 0.90, respectively both aligned with objectives related to teachers' perceptions, integration practices, and perceived academic outcomes of AI tools. The study had revealed that although teachers had recognized the potential benefits of AI in enhancing teaching and academic achievement, its practical integration had been hindered by infrastructural deficits, limited training, and lack of institutional support. Demographic factors such

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as gender, teaching experience, and school location had also shaped teachers' perceptions and adoption levels. The authors had emphasized the pressing need for targeted interventions, professional development, and institutional reforms to address these barriers. They had concluded that despite acknowledged benefits, AI adoption in secondary schools remained minimal, calling for policy-driven efforts to equip teachers with digital competencies and to invest in infrastructure that supports equitable access to AI technologies.

Alghasab (2025) investigated the role of artificial intelligence (AI) in enhancing English language writing skills among K-12 students, noting that despite the innovative potential of AI, little had been previously known about students' actual practices and perceptions. Using a mixed methods approach, the study had 69 students complete a questionnaire and 35 participate in semi-structured interviews. The results suggested that students had been highly familiar with tools such as Grammarly, ChatGPT, and Google Translate, though less familiar with other AI writing technologies. Viewed through a sociocultural lens, these tools were reported to have supported various stages of the writing process by scaffolding idea generation, vocabulary development, and textual accuracy. While students had recognized the benefits of AI assistance, they had also voiced concerns about its long-term effects on their ability to write independently. The study was found to offer practical insights for secondary educators on how to thoughtfully integrate AI writing tools into traditional classroom practices.

Ng et al. (2024) had examined the growing emphasis on artificial intelligence (AI) literacy as a means to equip students with essential digital competencies for effective evaluation, communication, collaboration, and ethical application of AI across various settings, including online, home, and the workplace. It had been noted that many countries were increasingly designing AI curricula to bolster students' technological capabilities in preparation for future academic and career pathways. Despite this progress, the study had highlighted a notable gap in review literature concerning AI education at the secondary school level. Aiming to bridge this gap, the authors had conducted a thematic analysis of 50 studies published between 2016 and 2022, analyzing pedagogical strategies, instructional tools, curriculum content, and assessment approaches used with secondary students. Their findings had revealed that collaborative, project-based learning centered on interdisciplinary problem-solving through artifact creation—had been the most frequently employed pedagogy. Instructional tools had been classified into hardware, software, intelligent agents, and unplugged tools. It had also been found that younger students were introduced to AI through basic concepts and experiences, while older students engaged with more advanced and technical elements. Assessments had comprised knowledge tests, surveys, and qualitative analyses of student outputs. Learning outcomes had been evaluated across affective, behavioral, cognitive, and ethical dimensions. The review had concluded by outlining key challenges and practical recommendations for enhancing AI education in secondary schools, providing valuable guidance for educators, researchers, and policymakers.

Karan (2024) had examined the swift emergence of artificial intelligence (AI) and its impact on education systems across various levels. The study had highlighted that, recognizing the broad implications of AI, the Indian Central Board of Secondary Education (CBSE) had developed an AI

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integration manual outlining strategies and methods for embedding AI into teaching and learning across its affiliated schools. Employing thematic analysis, the research had aimed to investigate the potential benefits and applications of AI within K–12 education, particularly in the context of CBSE's initiatives. Findings had indicated that the CBSE had adopted a dual approach: introducing AI as a standalone subject and incorporating it as a pedagogical tool across other disciplines. The study had concluded with reflections on the innovative use of AI in K–12 educational settings.

Quyet et al. (2024) examined the use of Artificial Intelligence tools such as Grammarly and ChatGPT in the learning process, particularly in foreign language acquisition among high school students. The study aimed to synthesize both the advantages and drawbacks of AI integration in English language learning and to explore the current status of AI usage among Vietnamese high school students. The authors had reviewed around 30 peer-reviewed articles published between 2018 and 2024 to structure theoretical insights on the topic. They had also conducted a survey involving 300 high school students in Hanoi, with 297 valid responses analyzed. The findings had indicated that AI tools were widely and frequently used by students across all four language skills—listening, speaking, reading, and writing. It had also been noted that students generally understood the benefits and limitations of these tools. However, the use of AI remained largely unsystematic and unsupported by teachers or schools. The authors had concluded by offering recommendations aimed at educators and institutions to foster more effective and guided use of AI in English language learning.

Cukurova et al. (2023) explored the slow-paced adoption of AI-based adaptive learning platforms in schools despite existing evidence of their potential impact. They noted that many AI tools introduced in educational settings had not necessarily stemmed from rigorous academic research, raising concerns about identifying and understanding the key factors influencing adoption. To address this, the authors reportedly developed a reliable instrument designed to capture a broader range of influences on teachers' adoption of such platforms. This instrument was implemented with a substantial national sample of 792 teachers, and the resulting data were used to predict real-world engagement with adaptive learning technologies. Findings from the study indicated that while teacher knowledge, confidence, and perceived product quality were important, they were not always the most critical predictors of engagement. Factors such as reduced additional workload, enhanced teacher ownership and trust, availability of support mechanisms, and attention to ethical concerns were found to be equally or more influential. The paper was said to conclude with a discussion on the importance of these factors in improving the adoption and efficacy of AI tools in education by refining predictive models and reducing variability in real-world implementation.

An et al. (2023) had explored how artificial intelligence (AI) was opening new possibilities for K-12 English as a Foreign Language (EFL) teachers to enhance their instructional practices. To examine the rising integration of AI into education, the study had investigated EFL teachers' perceptions, knowledge, and behavioral intentions toward using AI in middle school English teaching. Drawing on the Unified Theory of Acceptance and Use of Technology (UTAUT) and Technological Pedagogical and Content Knowledge (TPACK) as its theoretical framework, the research had

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employed a survey conducted in an AI education demonstration district in China. The instrument, a 5-point Likert scale developed from prior studies and teacher interview data, had yielded 470 valid responses. The scale's reliability and validity were reportedly sound, encompassing eight constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), AI Language Technological Knowledge (AIL-TK), AI Technological Pedagogical Knowledge (AI-TPK), AI-TPACK, and Behavioral Intention (BI). Findings had indicated that EFL teachers held positive views overall, with PE, SI, AIL-TK, and AI-TPACK significantly predicting BI, while EE, FC, and AI-TPK indirectly influenced BI. The study had aimed to offer a theoretically informed guide for educators and policymakers to support the integration of AI in language instruction.

Hameed and Hashim (2022) had examined the integration of technology in English language teaching, emphasizing its growing importance and widespread benefits globally. Their study had highlighted that while technological advancements contributed significantly to enhancing students' learning and knowledge, they had also placed considerable pressure on teachers, particularly in ESL contexts. The authors had aimed to explore the challenges ESL teachers encountered when incorporating Fourth Industrial Revolution (4IR) technologies. Utilizing a qualitative research design, they had involved ten ESL teachers from various schools within the same district. The study had revealed multiple obstacles, including poor internet connectivity, limited exposure, and inadequate technological resources. Theoretical frameworks such as diffusion of innovations and constructivism had been used to support the analysis of ESL teaching practices. The paper had concluded with suggestions for future research on the adoption of 4IR technologies in ESL education.

Sun (2021) had examined the issue of human subjectivity within the "5G + AI + Education" system, addressing both the practical challenges emerging from the evolving application of artificial intelligence and the philosophical reflections on its integration into specific educational contexts. The study had aimed to reassess human subjectivity in light of technological advancement, suggesting that immersive learning environments enhanced by AI and hologram technologies could significantly boost student motivation. The paper had detailed the implementation of "5G" in online oral teaching, offering a case study that illustrated a novel teaching model, while identifying its strengths and suggesting remedies for its limitations. It had also demonstrated how gesture recognition was visualized in each step through an interactive interface, allowing students to follow the process more intuitively, thereby aiding their comprehension and fostering logical thinking—particularly among primary and secondary school students. Finally, a comparative experiment had been conducted to evaluate the system's effectiveness in teaching AI concepts against traditional methods, with results showing improved student engagement, learning interest, and practical abilities.

Sun et al. (2021) were reported to have defined artificial intelligence education (AIEd) in the educational field as the utilization of artificial intelligence. They noted the existence of numerous AIEd-driven applications currently used in schools and universities. Their study was said to have applied an AI module combined with knowledge recommendation to develop an online English teaching system, which was compared with common teaching auxiliary systems. The authors

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highlighted that their English teaching method was effective in exploring potential internal connections between evaluation outcomes and various factors. They reportedly developed a deep learning-assisted intelligent online English teaching system designed as a modern platform to enhance students' English learning efficiency according to their knowledge mastery and personality traits. Decision tree algorithms and neural networks were utilized to generate an English teaching assessment model based on decision tree technology. The system was described as providing valuable data from extensive information, summarizing rules and data, and aiding teachers in improving both education quality and students' English scores. The system was said to embody the principles of an AI expert system. Test applications reportedly demonstrated that the system helped students improve learning efficiency and made learning content more relevant. Additionally, the system was presented as a referential example model employing similar methods.

Ge and Hu (2020) argued that the advent of internet and big data technologies had provided abundant information resources, which had significantly transformed society and the economy. They noted that these technological advancements had drawn considerable attention toward their application in the education and teaching management of colleges and universities. The authors highlighted that artificial intelligence, characterized by intelligence, personalization, accuracy, and diversity, offered innovative possibilities for reforming teaching management methods in higher education. While they acknowledged that AI applications in Chinese higher education had already achieved some foundational progress, they emphasized that, compared to other industries, these efforts remained at an early stage. Ge and Hu suggested that the future direction involved leveraging AI to actively build an AI ecosystem in higher education, innovating application modes across student management, faculty development, and teaching administration. They concluded that AI adoption promised to elevate the management standards of education and teaching to a new level.

Hastungkara and Triastuti (2019) were reported to have examined how technological advancements had progressively impacted the development of communication networks, computers, and the Internet. Their study highlighted Artificial Intelligence (AI) as a significant innovation among these technologies, with its usage predicted to expand globally, including in Indonesia. They were said to have explored the influence of AI technology on enhancing the effectiveness of e-Learning concepts, emphasizing its potential to integrate with and advance the Indonesian education system. The research reportedly aimed to investigate both the potential and impact of applying AI in e-Learning, as well as assess the readiness of various factors affecting the education system and Information and Communication Technology (ICT) infrastructure in Indonesia. Their discussion was based on secondary data and comprehensive observations of the existing learning structures.

Kim (2019) investigated the effects of using artificial intelligence chatbots on improving English grammar skills among Korean college students. The study involved 70 undergraduates enrolled in a General English class at a Korean university, divided into two groups: 36 students in the chatbot group and 34 in the human chat partner group. Over a 16-week period, the chatbot group participated in ten chat sessions with a chatbot, while the human group engaged in conversations with human partners. Pre- and post-tests were administered to assess grammar skill improvements, and an

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independent t-test was conducted to compare progress between the groups. The findings revealed that both groups showed significant improvement in English grammar, demonstrating the benefits of interactive chat. However, the chatbot group exhibited significantly greater gains than the human group, suggesting superior effectiveness of chatbot use. The study thus confirmed the enhanced grammar skills achieved through chatbot interaction and offered recommendations for future research on chatbot applications.

Keerthiwansha (2018) was reported to have distinguished artificial intelligence (AI) as intelligence demonstrated by machines, contrasting it with natural intelligence (NI) observed in humans and animals. The study defined Artificial Intelligence in Education (AIEd) as the application of AI within educational contexts and noted that although various AIEd-driven tools were already in use globally in schools and universities, such applications had not yet been tested in Sri Lanka. The research highlighted challenges faced by ESL teachers in Sri Lanka, such as overcrowded classes with over 40 students of mixed proficiency levels, predominance of low-proficiency learners, difficulties in tailoring lesson plans accordingly, inconsistent attendance, limited teaching and assessment time, and extensive documentation demands. The study explored the potential of integrating AI into ESL classrooms to enhance student engagement and teaching efficiency, proposing a concept aimed at reallocating time and effort from administrative tasks to active teaching and learning. This approach was described as shifting away from traditional lecturing toward a self-learning model, enabling students to access personalized lessons, track their progress and errors, communicate with teachers and peers for clarification, and review lessons remotely if absent. However, the implementation of AIEd was noted to require both teachers and students to be proficient with computers, the availability of computers with internet access for all students, and expert support to maintain the AI systems.

III. METHODOLOGY AND FINDINGS FROM THE STUDY

Author(s)	Focus	Methodology	Findings
Zhao et al. (2025)	Factors influencing AI adoption in Chinese middle schools	SEM, TAM, UTAUT, Innovation Diffusion Theory	Interpersonal Relationships, Perceived Usefulness, Ease of Use were key; embedded social networks recommended
Sunday et al. (2025)	Teachers' perceptions of AI in Nigerian secondary schools	Descriptive, correlational; 600 teachers	AI recognized as beneficial but hindered by poor infrastructure, limited training, institutional support
Alghasab (2025)	AI tools supporting English writing skills among K-12 students	Mixed methods; 69 surveys, 35 interviews	Tools like Grammarly helped writing; concerns over independent writing ability

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Ng et al. (2024)	AI literacy education at the secondary level	Review of 50 studies (2016-2022)	Project-based learning common; gaps in curriculum & assessment alignment
Karan (2024)	CBSE's AI integration in Indian K-12 education	Thematic analysis	CBSE introduced AI as subject and tool; dual integration model
Quyet et al. (2024)	AI tool use in Vietnamese high schools for language acquisition	Survey of 297 students, literature review	High usage of AI tools but limited teacher involvement and guidance
Cukurova et al. (2023)	Adoption factors for AI adaptive learning platforms	National survey; 792 teachers	Workload, ownership, support systems more important than technical features
An et al. (2023)	EFL teachers' intention to use AI in China	UTAUT & TPACK framework; 470 responses	Positive BI influenced by PE, SI, AIL-TK, AI-TPACK
Hameed & Hashim (2022)	Challenges of 4IR tech in ESL classrooms	Qualitative; 10 ESL teachers	Barriers included connectivity, exposure, tech access
Sun (2021)	5G+AI+Education: student motivation & subjectivity	Case study and experimental	Improved engagement using holographic and AI tools
Sun et al. (2021)	AI-supported online English teaching platform	System design using AI modules	Efficient, personalized learning outcomes; effective assessments
Ge & Hu (2020)	AI in Chinese higher education management	Conceptual and observational	Suggested ecosystem approach for education management with AI
Hastungkara & Triastuti (2019)	AI and e-learning in Indonesia	Review and analysis of ICT readiness	Advocated AI for e-learning; noted infrastructure gaps
Kim (2019)	AI chatbots for English grammar improvement	Experimental; 70 Korean undergraduates	Chatbots improved grammar more than human partners
Keerthiwansha (2018)	AIEd for ESL in Sri Lanka	Contextual case analysis	AI helps engagement, but requires infrastructure and training

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IV. PROPSOED PROCESS MODEL

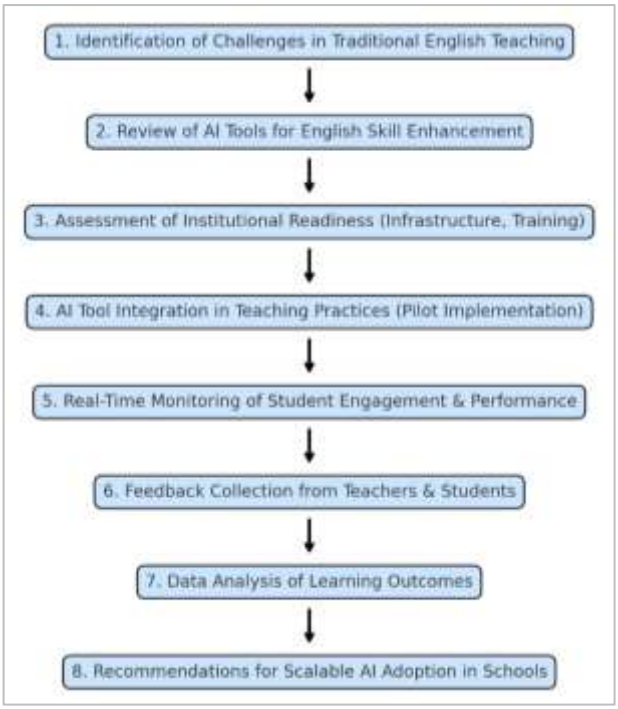

Fig 1: Adoption of AI Technologies for Teaching -Process Flow

Identification of Challenges in Traditional English Teaching: This step involves assessing existing limitations in government schools such as lack of trained teachers, outdated curriculum, overcrowded classrooms, and poor digital infrastructure that hinder effective English language instruction. These problems serve as the rationale for exploring AI integration.

Review of AI Tools for English Skill Enhancement: AI technologies such as grammar checkers, speech recognition apps, chatbots, and adaptive learning platforms are evaluated for their ability to support reading, writing, listening, and speaking. The tools' capacity to offer personalized, engaging, and feedback-driven learning is reviewed here.

Assessment of Institutional Readiness: A critical step that evaluates whether schools have the necessary infrastructure (computers, internet), teacher preparedness (digital literacy), and administrative support (policies, funding) for adopting AI technologies. This ensures that implementation is feasible and sustainable.

AI Tool Integration in Teaching Practices (Pilot Implementation): Selected government schools are chosen for pilot projects where AI tools are embedded into English language teaching practices. This phase includes teacher training, resource deployment, and curriculum integration to test real-world applicability.

Real-Time Monitoring of Student Engagement & Performance: AI systems generate continuous feedback on student interaction, engagement, and learning outcomes. Teachers monitor dashboards that track progress in grammar, pronunciation, reading comprehension, and writing ability.

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Feedback Collection from Teachers & Students: Structured surveys, interviews, and focus group discussions are conducted to gather qualitative and quantitative feedback. Teachers share insights on classroom management and workload, while students express their learning experiences with AI tools.

Data Analysis of Learning Outcomes: All collected data—test scores, usage metrics, and stakeholder feedback—is analyzed to evaluate the impact of AI integration on students' English proficiency, confidence levels, and overall classroom participation.

Recommendations for Scalable AI Adoption in Schools: Based on the results, detailed recommendations are proposed for large-scale AI integration across government schools. This includes training models, funding strategies, policy support, and a roadmap for future implementation [15].

V. CONCLUSION

The adoption of AI technologies in English language teaching holds transformative potential for Government Senior Secondary Schools. By addressing long-standing challenges such as inadequate teacher preparation, lack of personalized instruction, and engagement deficits, AI tools can greatly improve language proficiency and learning outcomes. However, the success of such integration depends on careful assessment of institutional readiness, teacher capacity, and supportive infrastructure. This study emphasizes the need for collaborative efforts between policymakers, educators, and technology providers to overcome existing barriers and ensure effective implementation. Ultimately, the responsible and strategic use of AI can contribute significantly to the democratization of quality English education in public schools.

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