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AI is Ineludible in Alleviating English Language Learning at Government Secondary Schools: An Action Research

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ABSTRACT

The study, "AI is Ineludible in Alleviating English Language Learning at Zill Parishad Secondary Schools: An Action Research," was implemented at the high school level in Kovvuru Mandal, East Godavari District, Andhra Pradesh. The study collaboratively integrated AI (Artificial Intelligence) tools to enhance students' language acquisition levels to meet the learning outcomes of NEP 2020. The study conducted a quantitative and qualitative analysis of the data to see the effect of AI on language improvement. The quantitative analysis showed a significant improvement in the students' academic achievements in English. The qualitative analysis conducted included both Likert Scale analysis of the questionnaire and an unstructured interview. The study considered teachers' opinions on the integration of AI to generate lesson plans, to present

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the digital content in an interesting, joyful way, and to prepare question papers to assess students' learning improvements. It also obtained the teachers' views on how far they are succeeding in integrating AI to make English learning an easy way. The study also confronts the challenges of technology interventions in rural students, especially where there is no free internet and power failures. The paper proposes suggestions to the system to achieve the required aims of equity, quality, and inclusiveness outlined in NEP 2020.

Keywords: AI; Language Acquisition; Learning Outcomes; NEP 2020; Technology Intervention; Equity; Inclusive Education System

1. Introduction

The visionary National Education Policy (NEP) 2020 emphasizes the significance of inclusion, quality, and equity (see **Figure 1**). It aims to ensure quality learning opportunities for everyone, irrespective of their socio-economic background. In the existing scenario of NEP 2020, teachers, teacher educators, and philosophers are seeking to introduce AI in education to achieve the expected learning outcomes.

1.1. ICT Initiatives in India

India stands out as a prominent nation in the field of information and communication technology (ICT), as well as in other dynamic domains, such as space. The amalgamation or blending of technology to ameliorate different facets of education will be endorsed and embraced. These interventions must be subjected to rigorous and transparent evaluation within contextually appropriate settings before being considered for broader application [1]. The government has taken numerous initiatives to digitize education. Some include DIKSHA, SWAYAM, PM e-vidya, National Digital Library, e-Pathshala, Learning Management System, Swayam Prabha, and the Digi Locker. The NEP 2020 highlights the need for 'Continuous Professional Development' (CPD) for teachers to improve their quality interactions and drive students towards their holistic development. It stresses the most essential postulate of availing available and upgraded technology for guiding and addressing language barriers, and increasing access to all. The policy focuses on investments in digitalization and the development of online teaching and learning systems or platforms, and tools to improve the quality of learning. It discusses the design of digital laboratories and repositories for educators and students. It also accentuates the training of teachers to enable them to create the finest online content, thereby creating and executing online assessments and establishing standards for content, technology, and pedagogy in online education [2]. Punya Mishra and Mathew J Kohler's Technological Pedagogical Content Knowledge (TPACK) framework describes the type of teacher pedagogical knowledge required to teach effectively with technology. The TPACK framework describes the various kinds of knowledge that teachers need to integrate technology into their teaching and the complex ways in which these bodies of knowledge interact with one another [3] (see **Figure 2**).

Figure 1. NEP 2020.

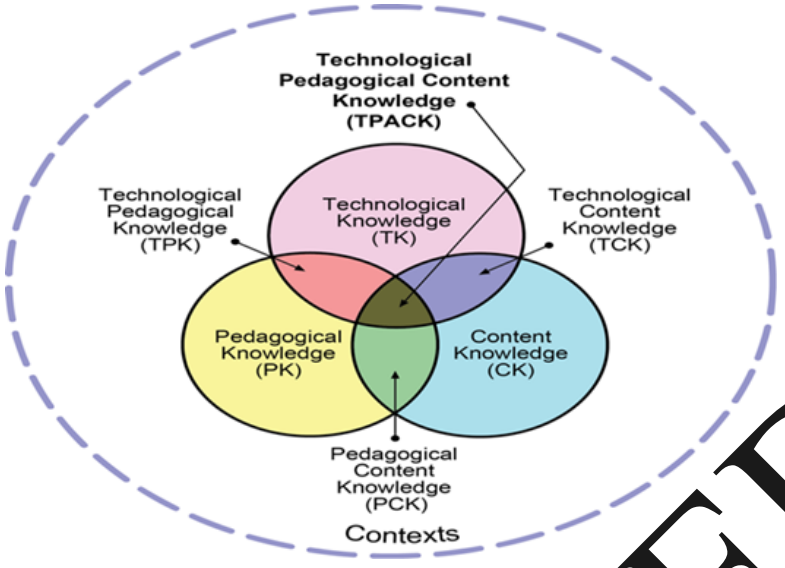

Figure 2. TPACK Model.

1.2. The Role of Teachers

"The study points out that the system expects teachers to act as facilitators and moderators, with varying obligations in various situations, within a technology-integrated learning environment commonly referred to as a network of society". There is a need for dynamic and diversified training or orientation for teachers to equip them with the skills and competencies necessary to manage classroom transactions and school activities effectively and to maintain a positive rapport with society. Two significant developments, such as Open Educational Resources (OERs) and the integration of Information and Communication Technologies (ICTs), have brought about substantial changes in the field of teacher education. The impact of these two developments has been quantified based on their complementary nature [4].

1.3. AI Interventions

"Along with technological advancements came the introduction of AI in education, providing personalized and accessible learning opportunities to all students. Artificial Intelligence (AI) is a strong term that is ruling the present world. It is present in every branch, like industry, healthcare, transportation, and education. AI in education can address the multiple challenges in today's education. AI helps to innovate diverse teaching and learning practices in the classroom according to the requirements or needs of learners, ultimately moving the progress of all students towards the UN's Sustainable Development Goal (SDG) 4". AI can create more interactive, personalized, and engaging learning experiences through gamified platforms, virtual simulations, and adaptive learning environments adjusted to learners' needs and expectations. AI can streamline various aspects of education, from lesson planning to assessment, making the process more efficient and effective and providing immediate feedback to both teachers and students. Artificial intelligence is ubiquitous, broadly referring to Large Language Models (LLMs), which are designed and programmed to perform cognitive tasks typically associated with human decision-making and analytical abilities. When AI is used to reduce obstacles in 21st-century classrooms, it can help teachers overcome common challenges in classroom management. Solutions provided by AI include efficiently supporting students of various ability levels, offering enriching multimedia experiences beyond textbook study, and providing personalized tutoring without diminishing the teacher's role in the classroom [5].

1.4. Advancement of AI in Education

Arvin's study outlines that "AI tools and models are gaining recognition among students due to their user-friendliness and expediency. A variety of simulations and prototypes are prepared to help the users by getting appropriate prompts from various areas, subjects, and disciplines. Students can utilize these AI tools in their curricular and co-curricular work. The methodology used by AI truly gives

creative and innovative ideas to people. AI apps also provide vast information within seconds, which will not only save time but also enrich the knowledge of the researchers". By observing and using different AI tools, people, particularly students, are able to think critically and analyze things rationally with a new perception [6].

Artificial Intelligence (AI) has exerted a profound influence on students' lives by reshaping multiple dimensions of their educational experiences and quotidian practices. As an instructional resource, AI demonstrates considerable pedagogical utility across diverse contexts. It enables the provision of learning materials that are adaptive to individual learners' cognitive needs and preferred modalities, thereby facilitating more efficacious and personalized learning outcomes. Furthermore, AI expedites processes of assessment and evaluation, enhancing efficiency in academic appraisal. Nevertheless, its integration also engenders a range of challenges, including overreliance on technological mediation, concerns regarding data privacy and security, and the potential attenuation of interpersonal interaction and social engagement.

The rapid advancement of technology has ushered in the millennial era, in which digital innovation has become an indispensable aspect of everyday life. This transformation is particularly salient for youth and women, who are increasingly confronted with the pervasive influence of technological progress. Within this context, individuals are required to exercise discernment in evaluating and filtering the vast array of information available to them. Such critical engagement is essential to mitigating potential adverse consequences, as the ease of global connectivity can also be exploited by irresponsible actors seeking to manipulate or destabilize future generations [7]. According to Sustainable Development Goal 4, quality education should be provided to all children. AI can provide innovative teaching methods to the teachers and interesting learning methods to the learners. Moreover, AI can face the potential challenges given by the educators, learners, and users, and it can solve their problems easily. However, the exponential development in AI indubitably creates a menace if it is not used properly. Policy makers and creators are conducting debates and brainstorming sessions about the pros and cons of the overuse of AI. "UNESCO has determined to use AI tools or technology to achieve the goals of Education 2030, and it supports Member States in implementing the Education 2030 Agenda, while ensuring that the core principles of inclusion and equity guide its application in educational contexts".

1.5. The UNESCO's Strategies for Quality Education

The mandate of UNESCO apparently demands that AI should be advanced from a human perspective. In order to prevent AI from deepening technical gaps both inside and across nations, it seeks to change the discourse to consider AI's contribution to resolving existing disparities in access to knowledge, research, and cultural diversity. The goal of "AI for all" is to ensure that everyone may profit from the current technology transformation, particularly in terms of creativity and knowledge [8]. Generative Artificial Intelligence (AI) provides educators, learners, and institutional administrators with access to sophisticated tools that hold significant potential for pedagogical innovation. Nonetheless, a nuanced understanding of both the affordances and limitations of AI in educational contexts is essential for its effective and ethical integration. Critical examination of AI's impact—encompassing both its constructive and adverse dimensions—enables policymakers and administrators to formulate strategies that optimize learning outcomes while mitigating associated risks. On the one hand, AI has the capacity to streamline administrative operations, thereby affording teachers greater opportunity to cultivate meaningful relationships and foster students' socio-emotional development. It further facilitates the personalization of learning pathways by adapting content to individual cognitive profiles and learning preferences, enhances accessibility for learners with disabilities, and supports researchers in collecting and analyzing data to refine curricular design and identify areas requiring pedagogical intervention. Moreover, AI expands the availability of digital resources and educational platforms, enriching both teaching and learning processes. On the other hand, its integration is not without significant challenges. These include concerns regarding data privacy and security, algorithmic bias with the potential to skew educational outcomes, the risk of pedagogical overdependence on technological mediation at the expense of teacher–student interaction, and the considerable financial implications of implementation and long-term maintenance.

Moreover, without the establishment of robust safe-

guards and effective monitoring mechanisms, Artificial Intelligence (AI) is susceptible to unethical use, as the accuracy and representativeness of its outputs are inherently constrained by the limitations of its underlying algorithms. Consequently, educators and administrators are compelled to critically evaluate both the advantages and drawbacks of AI integration within educational settings. Such evaluative deliberation is essential to ensuring that the adoption of AI in classrooms fosters authentic and meaningful learning experiences, rather than inadvertently undermining pedagogical objectives[9].

It is high time we consider the cultural perspectives of diverse societies and the responsibility of ensuring their sustainability when integrating AI in education.

2. Literature Review

An article explicitly states - In light of the United Nations' (UN's) Sustainable Development Goals (SDG), National Educational Policy (NEP) 2020, and as a part of Digitalizing the Education System, tabs with interactive online and offline content with internet access at school are given to the students by the government of Andhra Pradesh for quality learning. Every classroom features an interactive flat panel and internet access. This study qualitatively observed the quantitative improvements in students' academic achievements and attitudes toward the interactive screens. The study revealed a significant improvement in the students' academic achievements. The students expressed a positive attitude and optimism about benefiting from their interactive devices, which featured engaging content. The study examined the role of AI and electronic gadgets in achieving learning outcomes. The study also examined teachers' attitudes toward integrating technology and AI to enhance effective and constructive learning[10]. NEP-2020, Para 23.6, features the incorporation of technology-based education platforms and initiatives, such as Diksha, ePathshala, eVidyaloka, across schools and higher educational institutions to utilize e-contents in acquisition progression and leverage this proposal for the perpetual professional development of teachers. NEP-2020 also emphasizes tech-savvy teachers. Diksha is a platform that provides training for both teachers and students, and it can also serve as a valuable resource for facilitating the English language learning process[11].

Gunjan's study stresses that the 21st century is the age of information technology (IT), and it has established this through the advent of Artificial Intelligence (AI). Artificial intelligence (AI) dialogue systems, also known as conversational agents, leverage AI, natural language processing, and machine learning to emulate a human dialogue system. Integrating these systems in research and education shows promise in revolutionizing these fields by streamlining tasks and introducing innovative teaching and learning methods. As a technological tool, AI has significantly transformed the world and the economy. Siri, Alexa, chatbots, and others are promising tools of AI used to deduce customers' tastes in making predictions during online shopping based on their past actions, explorations, and experiences. In the current scenario, the education sector has also become a subject matter of AI or AI-integrated courses. It is a computer program, referred to as a machine learning system, that can think, act, and follow instructions as a human being can. Many educators opine that AI is the future of the education system, and shortly, the entire educational process, including teaching and learning, may become dependent on an AI-operated schooling system. AI-driven education systems may yield some adverse effects, such as the attrition of values, a threat to human civilization, potential health hazards to learners and staff, diminished employment prospects for conventional educators, total reliance on technology, a widening learning gap, challenges in data management and cybersecurity, and so on[12].

"AI has constrained the world's creativity, resulting in numerous headlines and sparking heated debates. Language teaching and learning, in particular, explores multiple opportunities for the integration of AI-powered technologies. Even before the emergence of generative AI tools like ChatGPT, numerous AI tools had created different adaptive learning pathways for language learners. A survey result indicated that most educators acknowledged AI's capacity to enhance pupils' metacognition in these four skill domains. The conclusive findings derived from the current research literature substantiate this fact. The most interesting applications of AI technologies are in the areas of self-regulation and pedagogy". There is evidence that automatic speech recognition technology could help reduce learners' anxiety about speaking in public. It is also reported that English language teachers are using AI-powered tools for a range of

tasks. The most commonly used apps are language learning apps, language generation AI, and chatbots. Many teachers are utilizing AI to create lesson materials that aid learners in practicing English, which is a proven fact[13].

The rapid expansion of technology and digital adaptability has transformed the way we dwell, the way we earn or work, and the way we learn. Digitalization is an integral part of our daily chores. It is one of the world's inescapable features and impulsive forces. Due to technological advancements and their widespread use, the world has made significant progress in various areas. This progress, in turn, is due to the amplification of AI. Language instructors can use AI in the most effective way in ELT classrooms. The use of user-friendly Strategies may help teachers make English Language education more interesting, interactive, and dynamic for learners[14]. The use of technology in education has experienced rapid growth in recent years. Duolingo is one of the most popular language-learning apps. This app offers a user-friendly, interactive, and free way to learn various languages, including foreign languages. The interactive feature of Duolingo provides fun learning experiences for students. Its flexible learning access allows students to learn from anywhere and at any time according to their interests and schedule[15].

The incorporation of Artificial Intelligence (AI) in learning a language, in general, and the English language in particular, has transformed the philosophy of teaching English as a Second Language (ESL). They offer interactive modules to the divergent learners by tailoring the content to the individual needs and creating an immersive and efficient learning environment. The real-time feedback after assessment empowers learners to improve their language skills independently. AI-driven tools can address linguistic challenges, such as pronunciation, grammar, and comprehension. The insights of AI integration will inform educators, policymakers, and stakeholders about the potential and limitations of AI in reshaping language acquisition. Ultimately, advocates for a synergistic approach that harnesses AI's capabilities to optimize ESL instruction while preserving the human elements essential for holistic language learning experiences[16]. The rapid integration of Artificial Intelligence (AI) into educational systems has prompted an exploration of its efficacy in language acquisition. However, they also emphasize the importance of careful implementation, taking into account ethical concerns and potential biases. The implications of integrating AI highlight the importance of ongoing research to optimize AI applications in language learning, ensuring they are equitable and effective across diverse educational settings. Furthermore, the use of AI for data analysis based on instructed frameworks for large language models could play a significant role in helping researchers analyze large datasets collected about language acquisition if the AI tools are used skillfully and responsibly[17]. The brisk development of digitalization has basically transformed various spheres of life, particularly the transaction methods in education. In recent years, the education system has gained momentum, with Artificial Intelligence (AI) emerging as one of the most influential innovations. Its presence has reshaped how students approach knowledge, transforming academic routines through platforms such as ChatGPT, Grammarly, and QuillBot. Thematic analysis of interviews confirms that students tend to use AI as a substitute rather than a support, and lack institutional guidance on its ethical boundaries. These findings highlight a critical gap between technological knowledge and moral literacy[18].

The increasing incorporation of Artificial Intelligence (AI) dialogue systems in educational and research contexts underscores their emerging role as pedagogical aids. While existing scholarship has engaged with the ethical considerations surrounding these technologies, there remains a discernible gap in empirical inquiry regarding the extent to which such ethical concerns contribute to students' overreliance on AI dialogue systems, as well as the subsequent implications of this dependency for their cognitive development and intellectual autonomy[19]. Advances in artificial intelligence (AI) technology have made significant contributions to English language learning, particularly in productive skills such as speaking and writing. However, the application of AI in this field still faces various challenges. This research aims to explore the primary barriers that students encounter when using AI to enhance their productive skills. The use of AI in language learning needs to be balanced with human interaction to enhance productive skills optimally[20]. Academic learning has been completely transformed by the use of AI in classrooms, which offers both advantages and challenges for students' development. This study examines how students' learning experience and academic performance are impacted by AI technologies, highlighting their perspectives

and the challenges associated with its implementation[21]. Recent advances in artificial intelligence, which is renowned for its ability to replicate human intelligence, have had a significant impact on many facets of society. More and more research is looking into artificial intelligence (AI) as a potential tool to support and enhance language learning, particularly in developing students' communication skills. Learning experiences that are personalized, interesting, and adaptable that cater to each learner's particular requirements and preferences are made possible by AI[22]. Artificial intelligence (AI) is reshaping the way we learn, teach, and make sense of the world around us – but it is doing so unequally. While one-third of humanity remains offline, access to the most cutting-edge AI models is reserved for those with subscriptions, infrastructure, and linguistic advantage. These disparities not only restrict who can use AI but also determine which knowledge, values, and languages dominate the systems that increasingly influence education[23].

Rationale of the Study

In the contemporary era of globalization, the escalating demand for Proficiency in English has underscored the imperative of effective language acquisition and advanced communicative competence. With the rapid evolution of technology, Artificial Intelligence (AI) has emerged as a transformative pedagogical tool, offering substantial potential in facilitating second language acquisition and enhancing linguistic proficiency. The review analysis revealed numerous contributions and studies aimed at understanding the impact of technology and AI-assisted applications on language and learning improvement. However, no one has studied the influence of AI on the facilitation of English Language learning in secondary schools in the rural areas of Andhra Pradesh, East Godavari. However, no action research has been conducted with rural secondary students to help them acquire the English Language. Thus, a gap exists, and the researcher undertook this Action Research to help students acquire the English Language.

3. Methodology

3.1. Objectives

– To see if there is a positive influence of AI in facilitating English Learning in Secondary Schools.
– To know the effect of AI-integrated technological tools in improving English Language Learning at secondary schools.
– To investigate whether there is an inevitable use of AI in the improvement of English Language facilitation
– To find out the influence of AI technology on the behaviours of teachers and students during the facilitation process.

3.2. Sample

The population of the study is secondary school children in Dommeru village in Kovvuru Mandal in the rural East Godavari District of Andhra Pradesh, India. The population under study is 435. The researcher systematically selected 100 students using Power Analysis from the list of students who had mobile phones with internet connectivity. The study qualitatively analyses the experiences of 22 teachers and 100 students in the rural East Godavari region of Kovvuru Mandal.

3.3. Design

The researchers conducted action research at the Kovvuru Mandal High School over a period of eight weeks. After obtaining the initial Pre-test scores of the students, the researcher implemented an action plan to intervene with AI through apps such as Diksha, Duolingo, and ELSA Speak, as well as websites like ChatGPT and Google Lens, to support students and teachers in improving their teaching and learning processes. After eight weeks, qualitative data from teachers and students, as well as quantitative data from students, were collected and analyzed. While analyzing the data, the CEFR (Common European Framework of Reference), a teacher-scaffolded checklist, was administered to analyze the Proficiency/Metacognitive Language levels. Learners used the specific, observable performance criteria to master the particular language skill. The CEFR checklist guided teachers to design the classroom transaction. For the qualitative analysis of the teachers and students, the researcher used a Likert Scale and an unstructured interview (see **Figure 3**).

Here are the AI tools used for the action research to improve listening, reading, speaking, and writing (see **Table 1**).

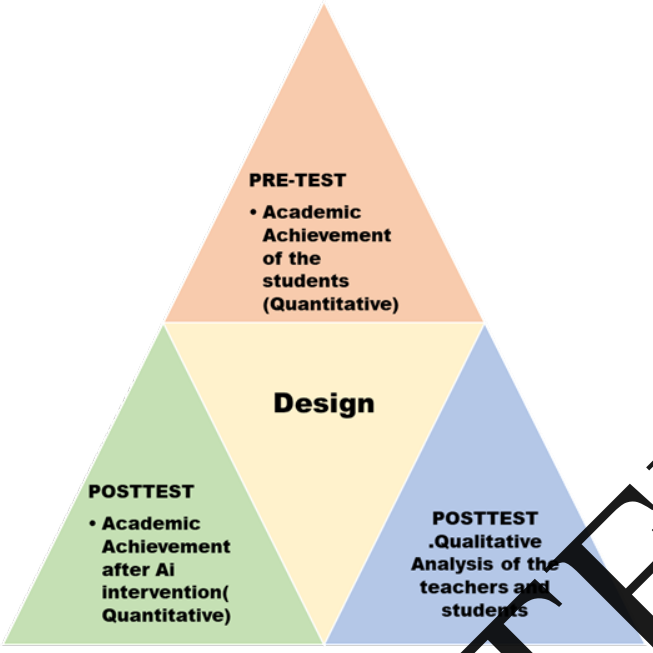

Figure 3. A diagrammatic representation of the design.

DIKSHA: The "Digital Infrastructure for Knowledge Sharing" (DIKSHA) app is a platform designed to support teachers, students, and parents with engaging learning materials, professional development, and assessment tools. It enhances learning outcomes with engaging and personalized content. It is a vast repository of resources. Students can learn at their own pace, anytime, anywhere [24].

Chat GPT: 'Chat Generative Pre-Trained Transformer' (Chat GPT) is a powerful AI chatbot developed by OpenAI that can engage in conversations and generate human-like text using natural language processing (NLP). It performs a variety of tasks, including answering questions, writing different types of content and discourses, and summarizing texts. Students have the opportunity to listen to the same discourse after the text has been generated [25].

Google Lens: Google Lens is a visual search tool that enables students to search the web using images instead of text (or images of text). It can help students translate vocabulary, understand complex concepts, find answers to questions, and even provide an opportunity to listen to the exact English text with the correct pronunciation [26].

Duolingo: 'Duolingo.com or Duolingo app is a self-paced and engaging language learning site or app which students can use independently to improve their target language skills through interactive activities and challenges.'

ELSA Speak: 'ELSA Speak is the world's smartest English pronunciation coach that listens to the way language learners pronounce words, sentences, or conversations to pinpoint exact errors and provide real-time, accurate feedback on their pronunciation mistakes with specific suggestions on how to improve.' It immediately suggests to the speaker or learner the level of accuracy, and students or learners can relearn and retry the same task until they achieve accuracy [24].

Table 1. AI Tools Used for the Study.

AI Tools	Listening	Reading	Speasking	Writing
DIKSHA	Listen to the audio content	Read the documents/content	They practice activities	Write their discourses
Chat GPT	Listen to the discourses generated	Read the discourses	Imitate and practice the discourses	Note down the discourses
Google lnse	Listen to the text	Read along with the AI-generated audio of the text	Practice	
Duolingo	Listen and learn	Read the text	Speak and practice	Give inputs
ELSA Speak	Listen to the responses	Read the text/responses	Involve and interact in different context/situations	Develop communication skills by interacting

3.4. Qualitative Assessment

3.4.1. Qualitative Assessment of the Students

The researchers conducted a qualitative assessment of the students through discourse analysis of their written tasks, the collection of their opinions using a Likert scale, and organizing an unstructured interview on AI-integrated teaching and learning practices.

Table 2 presents the simple questionnaire for students on a 5-point Likert scale.

Table 2. Questionnaire for students.

No.	Question Description
QS No. 1	I like AI in every day Classroom interaction.
QS No. 2	I use Chat GPT for my discourse generation.
QS No. 3	I use Google Lense for my students to improve listening and get right pronunciation.
QS No. 4	I use Duolingo for my students to get interested in the language acquisition.
QS No. 5	I use ELSA APP for getting the interactive and communication skills.
QS No. 6	I enjoy teacher integrating AI tools in my class room interaction.
QS No. 7	I explore other AI and DIKSHA apps for language improvements.

3.4.2. Qualitative Assessment of the Teachers

The researchers conducted a qualitative analysis of the teachers after the intervention of AI using a Likert Scale Analysis.

Table 3 presents the questions for teachers on a 5-point Likert scale.

Table 3. Questionnaire for teachers.

S. No.	Question Description
QS No. 1	I use AI in every day transactions
QS No. 2	I use Chat GPT for my discourses
QS No. 3	I recommend Google Lense for my students to improve listening and get right pronunciation
QS No. 4	I recommend Duolingo for my students to get interested in the language acquisition
QS No. 5	I ask my students to use ELSA APP for getting the interactive and communication skills
QS No. 6	I enjoy integrating AI tools in my classroom interaction
QS No. 7	I use Gamma AI PPT for creating Teaching Learning Material

4. Data Analysis and Findings

4.1. Qualitative Analysis of the Students

The researchers analyzed the scores obtained by the students using the Likert scale questionnaire.

Figure 4 suggests that many students appreciate the use of AI in their classroom interactions, and a significant number utilize ChatGPT for discourse practices. A maximum number of students use Google Lens to improve their pronunciation. More students are using the Duolingo and ELSA apps to enhance their communication skills. A few students expressed their lack of interest in exploring AI apps for language improvement.

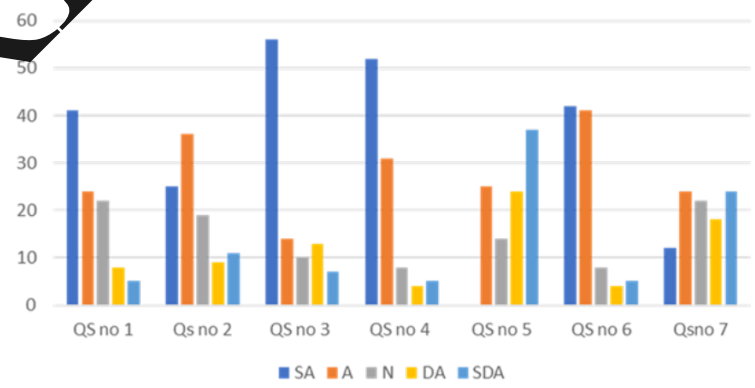

Figure 4. Qualitative Analysis of Students.

4.2. Qualitative Analysis of Teachers

The researchers analyzed the scores obtained by the teachers using the Likert scale questionnaire.

Figure 5 suggests that a few teachers utilize AI in everyday classroom transactions, but primarily use ChatGPT for discourse creation. Many teachers recommend using Google Lens to help their students improve pronunciation and translation skills. Many teachers recommend the Duolingo app, and a significant number of teachers also recommend the ELSA App for enhancing communication skills. Many teachers are unable to use Gamma AI for creating their Teaching and Learning Materials.

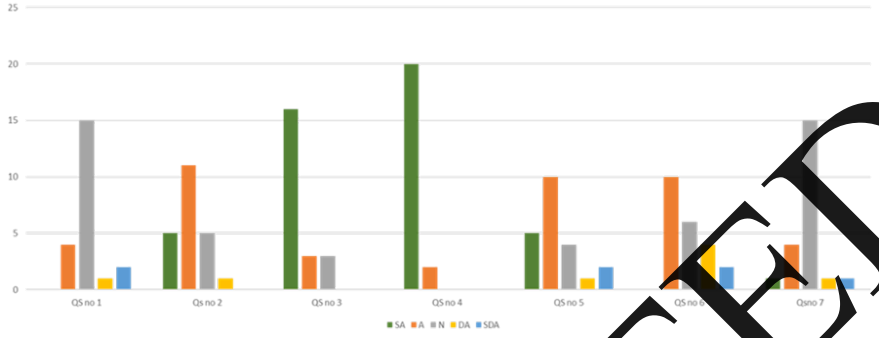

Figure 5. Qualitative Analysis of teachers.

4.3. Qualitative Assessment of Teachers' and Students' Opinions from the Interview

Many students expressed their eagerness to learn by integrating technology and AI. Some students expressed a lack of internet accessibility. A very few students were not able to decide on the results of AI Integration. Many teachers expressed their inability to access the Open Education Resources (OER). Some teachers showed interest in adapting to the new AI integration strategies. A very few teachers are not ready to change their conventional ways of teaching because they believe they cannot control students' ethical and moral behaviours with the ICT and AI interventions.

4.4. Quantitative Assessment

The researchers conducted a statistical analysis of the data from the pre-test and post-test.

Table 4 indicates that the post-test frequencies are significantly higher in the class interval range of 51–60 and 61–70.

Figure 6 suggests a significant change in the Pre-test and post-test scores frequencies.

Figure 7 indicates a significant change in the pre-test and post-test scores frequencies. There is a substantial improvement in the learners' achievements in the ranges of 51–60, 61–70, and 71–80.

Table 5 shows that the mean score of the post-test, 56.34, is significantly higher than the mean score of the pre-test, 45.89. Due to significant differences in the mean scores, the researchers subjected the data to a t-test. Paired t-test value is 5.22. (The level of significance of the t-test at 0.05 is approximately ±1.96). The t-test score obtained from the data is 5.22, indicating statistical significance. Thus, it demonstrates that AI tools have a significant impact on students' academic achievements.

Table 4. Consolidated Data of Pre-Test and Post-Test Scores.

Class Interval	Pre-Test f1	Post-Test f2
11–20	4	0
21–30	9	3
31–40	21	11
41–50	29	20
51–60	22	29
61–70	9	25
71–80	5	10
81–90	1	2
	100	100

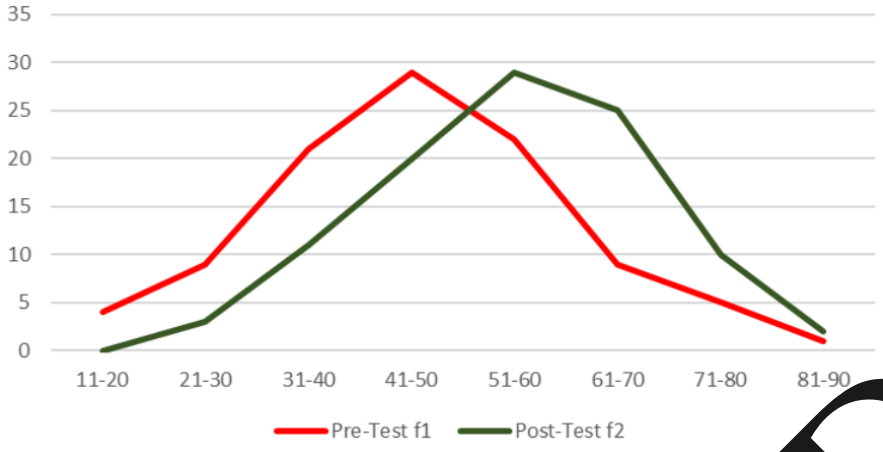

Figure 6. Frequency Polygon of Pre-Test and Post-Test.

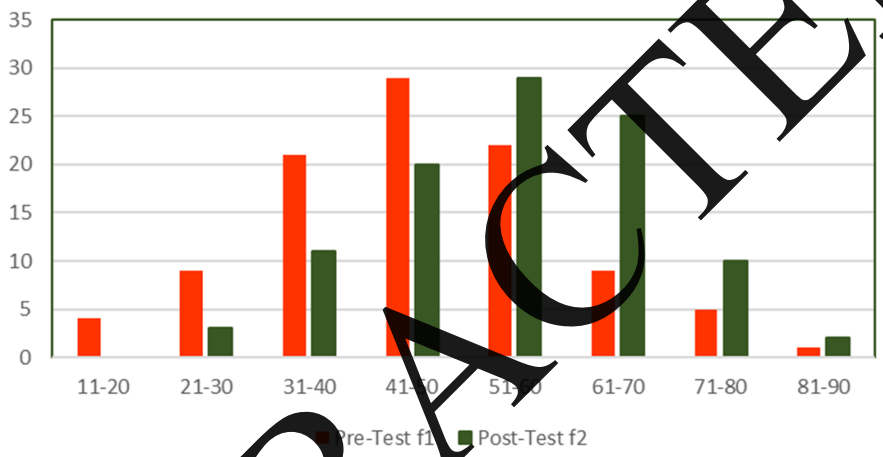

Figure 7. Pre-Test and Post-Test frequency scores analysis on a bar diagram.

Table 5. Means and SDs of Students' Achievements.

	PRE-TEST	POST-TEST
MEAN	45.89	56.34
SD	14.47	13.95

5. Limitations

- AI can create a digital divide among learners, and it may also reduce their creativity and empathetic towards others.
- Overdependence on AI is always harmful and might create job displacement.
- Technology is inevitable, but every teacher and learner must know when to use it, where to use it, what to integrate, and how to use it in the process of teaching and learning.

6. Conclusions

The action research shows that AI-integrated technological tools have a significant impact on secondary students' English learning, and hence, AI is inevitable in English language teaching and learning. It also suggests that certain apps, such as Duolingo, Google Lens, ELSA, and ChatGPT, have a prominent influence on teachers and students. There is a need to educate students and teachers regarding the DIKSHA platform. The study suggests that extensive orientation for teachers is necessary for them to effectively integrate AI into the preparation of teaching and learning materials for

classroom transactions, thereby meeting the UN's Sustainable Development Goals (SDGs). Some students and teachers expressed their satisfaction with integrating AI in their learning processes. An intensive study must also be conducted in other subject areas, for better, sustainable, and joyful learning.

7. Recommendations

The government must take initiatives to bridge the gap between digital and non-digital students. The system must give support to teachers to enhance continuous professional development and understand the dynamic, technological, and integrational aspects of the education system. There is a need for comprehensive research on AI to generalize the role of AI in the teaching and learning process of the English language. The world must also consider the aspects of the digital divide, which may pose a threat to the Sustainable Development Goal of equal education for all. The question of human uniqueness might be at risk with over usage and overdependence on AI. The study recommends integrating digital ethics education across curricula and establishing clear institutional policies to ensure responsible AI use in academic settings.

The convenience offered by AI models can lead to a change in mindset among students, where they may no longer feel the need to engage in critical thinking or conceptualization, as AI can readily provide the information and ideas they need. There is a possibility that AI might pose a threat to autonomy and decision-making. This typically arises when individuals struggle to assess the reliability of AI.

Author Contributions

S.I.S.M.: validation, supervision, and funding acquisition; V.K.: conceptualization, original draft preparation, and project administration; M.A.: methodology, formal analysis, and visualization; R.N.: investigation, review, and editing; A.V.: resources and conceptualization; S.P.K.A.: software and data curation; G.V.: conceptualization and data curation; I.S.: investigation, methodology and editing. All authors have read and agreed to the published version of the manuscript.

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The data used in this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflict of interest.

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