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The Pedagogy of Intelligent Systems: Integrating Ai into Future-Oriented English Language Learning

Feng Xiaoying[1], **Su Ruiqian**[2*]

[1]School of Foreign Languages, Yinchuan University of Energy, 750105, Ningxia, China
[2]School of Foreign Languages, Xiamen Institute of Technology, 361021, Fujian, China
[*]Su Ruiqian, rqsu12@163.com

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Abstract:

The article explores the use of intelligent systems and in particular Artificial Intelligence (AI) in English language teaching, yet with a particular focus on building a socio-technical framework of the pedagogy in the future. The study explores the way in which the newest technologies, such as AI based adaptive learning systems, Virtual Reality (VR), Augmented Reality (AR), and multimodal learning tools, can be applied to enhance language learning through offerings of personalized learning pathways, real-time information and immersion. Such intelligent mechanisms prove to be very effective in terms of learner engagement, motivation and language proficiency as compared to the traditional mechanisms such as textbook learning, lecture-based teaching and role-playing. The article discusses how AI-driven systems, such as speech recognition and interactive VR/AR simulations, can be effective in improving such skills as pronunciation, analysis, and practical language use in real-life situations. The results indicate that AI-based adaptive learning, gamification, and immersive environments can provide more scalable, efficient, and dynamic learning experiences compared to traditional techniques.

Keywords: Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), multimodal learning, adaptive learning platforms, personalized learning.

Introduction

The role of the English language cannot be overestimated in the modern globalized world. English is the main language of international business, science, technology and communication and this has led to the English language being an important skill

among the people in the world [1]. Nevertheless, even with all its significance, there are still a number of learners who have difficulties with learning the language. There are some limitations to traditional methods of learning a language like the classroom-based learning especially in the digitalized world [2]. Such aspects as the difference in learning rates, personal preferences, and unequal access to the resources all create the problem of becoming proficient in English [3]. The emergence of new technologies in education, in particular, within the framework of Artificial Intelligence (AI), is a special occasion to transform English language education. Such technologies as AI-based tutoring systems, adaptive learning systems, and interactive tools provide an opportunity to mitigate most of the flaws of the traditional teaching methods [4]. With the rapid evolution of AI and its applications in education, today, it is possible to create more productive, interactive and convenient environments to learn languages [5]. The need of such intelligent means in the English language teaching is getting increasingly evident. The traditional systems of education though had a role to play in the past, they cannot suffice to support the needs of the current learners. One type of a teaching methodology cannot be offered to the needs of various students [6] due to the diversity of needs. In this regard, the intelligent systems, such as AI-chatbots, speech recognition systems, and adaptive learning systems, can offer a possible answer [7]. These tools not only provide the students with personalized learning experience but also provide the students with further motivation and engagement, as they will provide them with immediate and pertinent feedback [8]. These systems provide the flexibility of using the language outside of the classroom and at the learner pace, which traditional methods cannot possibly achieve [9]. Additionally, being able to scale, they can accommodate a substantial number of students at the same time, and thus make English language education more inclusive and equitable [10].

Whereas AI has gradually gained attention and use in the educational sector, there is minimal literature on the impact of AI on the learning of the English language especially [11]. In spite of the fact that despite the research on individual technologies, e.g. AI writing aid or pronunciation software, has already been conducted in the connection with its efficacy, the research gap, in regard to how these technologies can be combined into a single, future-oriented system of education, exists [12]. With the world constantly changing and new issues arising, English language education has to keep up with the changes in the global environment [13]. The necessity of smart, versatile and dynamic learning systems has never been higher than ever [14]. This paper will attempt to fill this gap by discussing how smart technologies can be used to establish more vibrant and efficient systems of teaching the English language that will equip learners to meet the challenges and opportunities of the future. The primary goal of the study is to investigate and assess the purpose of smart processes in changing the English language education. In particular, the paper will find out the important intelligent technologies that can be integrated into English teaching and will evaluate their success in enhancing the outcomes of learners and

the challenges posed by the implementation of the systems into practice. The study also aims at recommending future suggestions on how the intelligent learning systems can be integrated to address the various needs of the learners and be scalable, adaptable, and accessible.

The conceptual analysis will be adopted in the paper, and it will entail narrative resurvey of existing curriculum on the topic to kit the subject matter of integration of smart mechanisms in teaching English language. It is based on the existing literature on the field of Artificial Intelligence (AI), adaptive learning systems, Virtual Reality (VR), Augmented Reality (AR), and multimodal learning tools to come up with an unified framework of the future-oriented language learning. The methodological field is reduced to deciding on the key technological trends, evaluating the level of their pedagogical potential, and exploring their consequences hinged on increased levels of engagement of learners, personalization, and overall competency in languages.

Related Work

The English language learning (ELT) as the area where artificial intelligence (AI) and other intelligent processes are being implemented is a theme which has gained a lot of attention in the recent years. Research has been conducted to learn how such technologies can be applied in increasing the engagement, motivation and the proficiency of learners in English. One of these most popular intelligent learning systems is the mobile learning platforms. Garzon et al. (2023) conducted a meta-analysis of the results of how mobile learning influences foreign language learning and discovered that the technologies of mobile learning are effective resources that could be utilized in order to develop language skills, particularly with the assistance of interactive and individualized information. Similarly, Semana et al. (2022) have also stressed that smartphones play a vital role in self-regulated learning and how smartphone-based assistance could be applied to improve speaking skills. Speaking about the AI-related systems of language learning, Meniado (2024) also mentions the increasing importance of the human-machine collaboration in language learning. Lu et al. (2025) suggested the use of the AI-based system of English speaking interactive training that involves the use of multi-modal neural networks to improve the speaking abilities. The same issue of enhancing the effect of language learning is discussed by Ericsson and Johansson (2023): the authors have examined the experience of the pupils of the lower secondary school who were engaged in speaking English with conversational AI devices. Moreover, Jawaid et al. (2025) have also addressed the likelihood of the AI to enhance communication skills and language learning outcomes.

The introduction of Artificial Intelligence (AI) into the English language teaching has become a game-changer, with a chance to tailor learning, boost the engagement, and enhance the language skills of diverse learner groups. Vo (2025) notes how AI systems facilitate more personalized learning experiences, by providing tailored lessons based on the level of proficiency and learning speed of individual learners,

real-time feedback, and enhanced overall engagement through adaptive systems. One of the most important issues Qiao and Zhao (2023) identify is the possibility of algorithmic bias of AI-based language tests. Zainuddin (2024) discusses the perception of teachers towards AI tools and how it will help improve student engagement. The article by Lu et al. (2026) discusses a smart English speaking training program, which combines generative AI and speech recognition to enhance speaking competencies. Pagliara et al. (2024) remark on the application of AI in inclusive learning where AI has the potential to provide personalized learning to a learner with disabilities or those who belong to a marginalized group. Hsu (2026) describes the growing relevance of AI literacy in pre-service teacher learning and the importance of teachers to be informed about the benefits of using AI tools and the ethical issues associated with their use. Keeping the information about students confidential and allowing its open use is essential to gaining the confidence of students and teachers. Alam and Windiarti (2025) address the possibility of this change resulting in a diminished role of teachers who may become more of technology facilitators and less of pedagogical leaders. To sum up, although intelligent systems like AI, VR, and AR hold enormous potentials of revolutionizing language learning, their successful application must be critically thought of in terms of opportunities and challenges.

Intelligent Mechanisms: Definitions & Typologies

Artificial Intelligence (AI)

Artificial Intelligence (AI) refers to the ability of machines to simulate the intelligence of human beings in such a way that they can perform functions, which would have otherwise required the human cognitive ability. In the English language learning context, there are several aspects of AI that can be employed to significantly enhance the learning process (fig 1). Machine learning (ML) is one of the core areas of AI and enables systems to gain knowledge through large volumes of data and get better as time passes. Machine learning algorithms in language learning are applied to analyse the learning patterns of students, assess the future performance, and customize the content to suit the needs of students. This style will make sure every learner develops at their pace and is given specific attention depending on their learning habits and abilities. Another critical component of AI that enables machines to comprehend and decode human language is the Natural Language Processing (NLP). With NLP, AI systems have the ability to analyze verbal or written answers of students and give them instant feedback on grammar, vocabulary, and sentence structure.

Adaptive Learning Platforms

Adaptive Learning platforms represent a category of educational technologies aimed at enhancing teaching and learning processes via adaptive learning, personalized learning, and intelligent learning. Adaptive Learning Platforms represent a type of educational technologies that focus on improving the teaching and learning process through adaptive learning, personalized learning, and intelligent learning. Adaptive

learning platforms are created in ways that personalize the learning process according to the needs or abilities of an individual learner and his or her progress. Such systems rely on an algorithm and data analytics to determine the level of student knowledge, learning rate, and potential areas of improvement. In this way, they will be able to modify the level of difficulty, content, and style of delivery of lessons to meet the specific needs of the learner. Adaptive learning platforms allow a learner to have an individual learning experience unlike in traditional teaching approaches where all students are taught according to a common curriculum at the same rate, which may not fully utilise their potential.

Intelligent Tutoring Systems

Intelligent Tutoring Systems (ITS) are advanced AI-based systems that are aimed at simulating one-on-one tutoring. These systems provide personal instructions by constantly examining the reactions of the learner and providing him/her with specific feedback like a human tutor does. ITS would have advanced algorithms which would check on the progress of the learners and adjust the level of difficulty of exercises as per their performance. This personal approach can be explained by the fact that it is essential to ensure that the students receive the right amount of challenge that will help to motivate them and avoid frustration and discouragement caused by overly challenging or easy tasks.

Conversational Agents & Chatbots

Chat bots can also be called conversational agents, which are AI-based tools that replicate human dialog with an opportunity to train speaking and listening in an interactive and exciting manner. These agents are coded to react to a broad diversity of inputs which enable the learners to participate in real-time conversations on different matters. Chatbots can be applied in language learning to recreate real-life conversations, like requesting directions, ordering food, or talking about hobbies, and learners can feel free to talk about them without fearing judgment. The interactive aspect of chatbots improves the learning process in language through providing contextual and meaningful practice. As an illustration, a chatbot can request a learner to explain a picture, and depending on the answer, it would comment on grammar, vocabulary, or fluency.

Proposed Intelligent Mechanisms for Future-Oriented Learning

Dynamic Curriculum Design

Dynamic Curriculum Design is a notion of the constantly changing and tailoring the learning process to the needs of individual learners. Within the English language instruction setting, this method implies the introduction of adaptive systems that are based on the AI and change the content and structure of the lessons according to the learner, his/her progress, strengths, weaknesses, and preferences. Conventional curriculums tend to be rigid in their nature and they take a set route of lessons and activities irrespective of the level of success or failure of the students. A dynamic

curriculum, on the other hand, changes with the learner, so he/she will never be faced with work that is neither too difficult nor too easy to do. Adaptive content sequencing with AI is the technology which provides this dynamic approach.

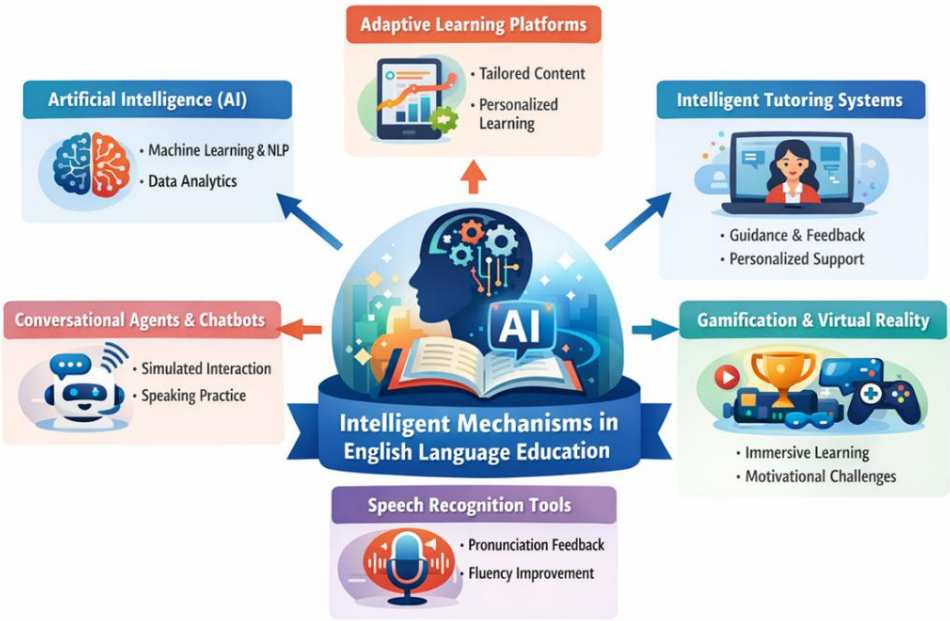

Fig 1: Intelligent Mechanisms in English Language Education

AI-based dynamic curriculum design step-by-step process

1. Assessment and Data Collection of learners.

The system gathers information concerning the level of English proficiency of the learner at the beginning of the learning process. The AI system gathers data on the performance of the learner as he or she advances with the lessons.

2. Artificial Intelligence-based Performance Analysis.

The system takes all the data of the learner and, with the help of machine learning algorithms, identifies the direction in which the learner achieves high results and needs more practice, which will be the direction of his weak points. The system does not only assess the performance of the learners but also provides insights regarding the way learners take new information, their learning preferences, and the degree of engagement.

3. Adaptive Sequencing of Content.

According to the AI analysis, the curriculum is modified to correspond to the needs of the learner. The AI will make sure that the lessons are always of the right level of difficulty. In case the learner learns a particular subject fast, the system will provide more difficult content.

4. Constant Evaluation and Feedback.

The system can give instant feedback to learners on their performance as they do the tasks e.g. by pointing out grammatical error or even giving the learner better ways to phrase a sentence. This is to ensure that learners realise their mistakes and correct them instantly.

Real -Time Performance Monitoring

Real-Time Performance Monitoring is an essential part of the contemporary educational system, especially in language learning, where the feedback is essential to be provided on a constant basis to improve. It entails monitoring of learners in terms of their development and performance in the process of interacting with learning materials and gives instant feedback of their strengths, weaknesses and general developmental progress. This tracking is enabled with the help of dashboards, showing real-time data to both the learners and teachers, and providing a more detailed perspective on the engagement of the learner, his/her proficiency, and the areas where attention should be paid. These dashboards are a customized tool to the learners and give them real-time feedback of their performances. As a student finishes a task, i.e. a quiz, writing assignment or speaking activity, the system automatically works with the results and displays feedback in the dashboard. Such feedback can be presented in the form of graphs, charts, or scores, requiring the learners to notice the extent to which they performed well, where their mistakes happened, and the aspect they should pay their attention to in the future.

Predictive Analytics

Predictive Analytics in education can be defined as the application of data-oriented models to predict the future performance of a learner, the possible obstacles, and the proactive measures. This smart system will use large volumes of data about learners, including previous performance, level of engagement, test scores, and behavioural patterns, to anticipate which students may be on the brink of underperforming or having difficulties in some areas of their language learning experience. With the identification of these learners at an early age, the education systems can be able to make proactive measures to see that these students are given the necessary support to be successful. Predictive analytics has a number of advantages in the English language education field that can change the way teachers and administrators determine student performance. To begin with, the technology can be used to identify at-risk learners, the students that might be performing poorly because of a lack of engagement or a tendency to repeat mistakes in certain language skills or the tendency to perform poorly on assignments and tests.

Personalized Feedback Systems

The Personalized Feedback Systems are smart systems that serve to offer automated, constructive responses, which are specifically based on the errors that each learner requires. These systems employ AI and machine learning algorithms to assess the performance of learners and the ways to improve it, provide feedback to learners, enabling them to comprehend their mistakes and learn them.

Step-by-Step Process for Personalized Feedback Systems

1. Learner Engagement with Content

The learner communicates with the system through the completion of different language learning exercises including quizzes, writing activities, pronunciation, or chatbots. These activities are supposed to evaluate various language skills, such as grammar, vocabulary, reading comprehension, writing fluency, and pronunciation.

2. Error Detection and Analysis

The AI system is used to scan the responses of the learner and identify mistakes. They may be grammatical errors, wrong use of words, wrong pronunciation or incomplete or irrelevant responses. To illustrate, when a learner writes a sentence using wrong verb tense, the system is able to detect this error.

3. Feedback Generation

Computerized, Personalized Feedbacks: Depending on the mistakes made, the system provides feedback that is constructive and focused. The feedback is not general but specific to the mistake committed.

4. Supplying Supplemental Learning Materials

Once the feedback has been provided, the system can propose further materials to assist the learner draw attention to the areas he/she is not performing well.

Immersive Learning Environments

Immersive Learning Environments refer to Virtual Reality (VR) and Augmented Reality (AR) in order to build out interactive and dynamic learning environments to allow learners to practice and perfect their language in situational settings. Unlike the conventional classroom learning VR/AR simulations may assist learners engage in the real setting where they are able to engage in the language within the setting and they are not frustrated to understand and remember language concepts easily. In Virtual Reality (VR), learners experience the full immersion into the three-dimensional virtual world, a busy street in an English-speaking city, a marketplace, or a restaurant. Through VR headsets, learners are able to communicate with virtual characters and objects, and they can practice language in real-life scenarios. As an example, a learner can be taken to a virtual grocery store where they will have to request certain products, train shopping-related vocabulary, or have conversations with computer-

generated characters. This is an environment of total immersion which mimics real life situations, and the learner will be encouraged to apply the English language in contextual situations. Augmented Reality (AR) on the other hand is an improvement to the actual world by superimposing digital content on the real world. Using the AR application, students are able to scan their smartphones or tablets with items in their surrounding environment, like food products in their kitchen, and they are presented with immediate information in English, like labels on vocabularies, descriptions, or sounds.

Fig 2: Multimodal Language Support

Methodology

The conceptual analysis and the establishment of a framework based on the narrative review of the existing literature support the research methodology of incorporation of intelligent mechanisms in English language education.

1. Conceptual Framework Development

The initial activity in this study was to formulate a conceptual framework in order to appreciate the role of intelligent mechanisms in English language education. This model was based on theoretical ideas of educational technology, cognitive science and socio-technical systems. The model forms the basis of the analysis of the potential to use AI-driven tools, immersive technologies, and adaptive learning platforms to improve and change the way language is learned. Intelligent mechanisms are a well-defined term in this context. Such mechanisms can be described as the systems that utilize technologies like Artificial Intelligence (AI), machine learning (ML), natural language processing (NLP) and speech recognition to support, enhance or optimize the learning processes. These systems are defined by the possibility to adapt to the

needs of learners on the fly, offer learners personalized learning tracks, and create adaptive feedback on the basis of the data-driven insights.

2. Literature Review

After the framework was developed, literature review was performed to synthesize the available research on the field of intelligent mechanisms and their uses During the language learning process. The narrative review was divided into thematic units in order to give the big picture of the state of AI, VR, AR, and other smart devices in the education environment. This section summarized the literature on AI use in language education i.e, the AI-based tutoring systems, speech recognition systems, and adaptive learning systems. These systems can provide live feedback, assess the performance of the learners and can even tailor the content to the requirement of the learners. The review also highlights the effectiveness of AI, and its failure to boost language skills, in particular, speaking, writing and grammar. Immersive technologies, such as VR and AR, are becoming increasingly popular in language education due to their potential to recreating simulated real-world settings through which students are able to practice language in contextual settings.

3. Critical Analysis and Framework Synthesis.

A synthesis and critical analysis of the findings were carried out after the narrative review. This measure involved interpreting the results of information obtained during the literature review by the conceptual framework. The purpose of the synthesis was to make the connections between the theoretical concepts concerning intelligent mechanisms and the real practice of language teaching. The paper has explored how intelligent mechanisms can be integrated into the current educational models, in comparison with standard classroom practice with the opposite approach; AI and immersive technology-based practice. The research will summarize the findings in order to establish the most appropriate technologies that would be able to fill the gaps in the traditional language learning as well as where the research would have to be refined.

4. Framework Evaluation

The framework after synthesis was compared with the challenges and opportunities presented by the intelligent mechanisms. This discussion was done to gain insight into the potential application of such technologies in the process of equipping a person with language learning in connection with social, ethical and pedagogical challenges that could arise in the process. It also was considered on the basis of viability of the implementation of these technologies in various educational environments, both in highly-resourced urban schools and in under-served rural ones. The review relies on the case studies of the current use of AI and immersive technology in language learning. Such case studies facilitate in assessing the real performance of these tools in diverse learning situations.

Findings and Discussion

In this section, I will present a conceptual interpretation of the results obtained based on the narrative review of the available literature. The included figures and table are illustrative figures that are built to underscore broad trends and comparative insights that have been reported in prior studies. They are not the primary empirical data, but the visual tools, which help to discuss the suggested intelligent learning framework.

This bar plot (fig 3) demonstrates the general advancement of language learning in a number of categories indicating the efficiency of intelligent learning tools like AI-based adaptive learning systems, multimodal learning and speech recognition devices. The plot shows that the most significant improvement is observed in the multimodal learning when the learners work with text, audio, and video, namely, the language proficiency and retention. There are also strong improvements in engagement and fluency, which demonstrate the effectiveness of technologies, such as gamified experiences and conversational AI, in terms of motivation and learning outcomes.

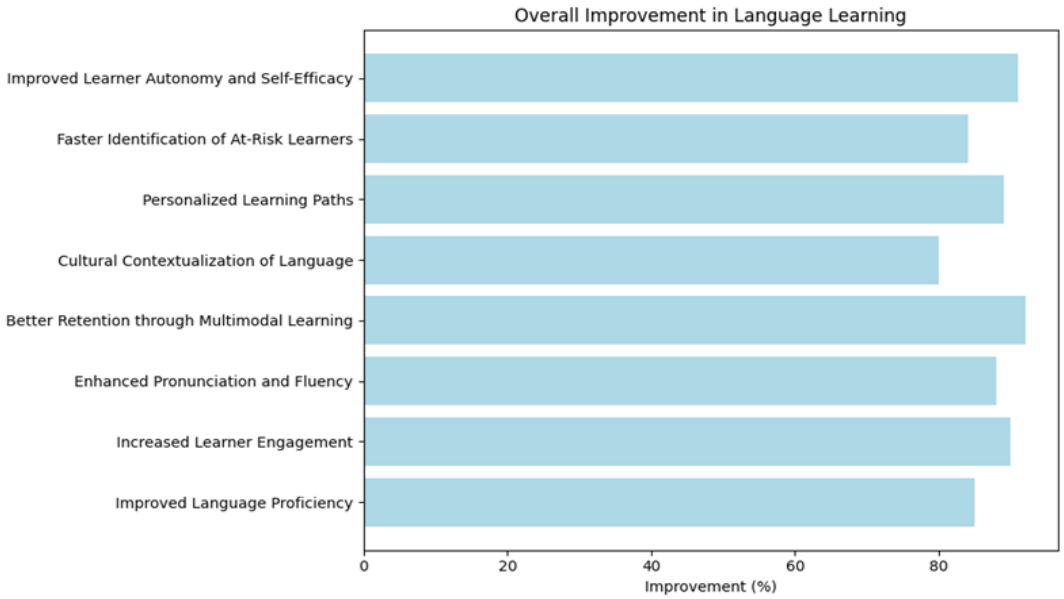

Fig 3: Overall Improvement in Language Learning

The pie chart (fig 4) gives a pictorial depiction of the distribution of the improvement between various learning categories. As shown by the chart, the greatest part of the improvement is provided by multimodal learning, then learner autonomy and personalized feedback systems are provided.

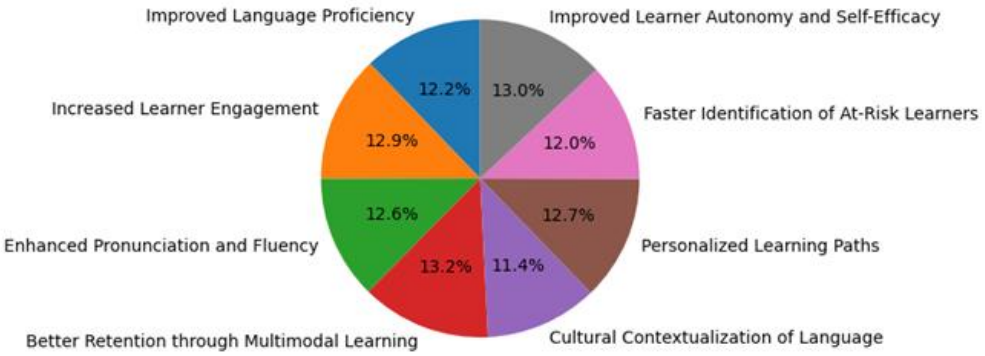

Fig 4: Improvement Distribution by Category

Smaller fractions of the chart constitute pronunciation improvement and culture contextualization, indicating that these aspects can be positively influenced by intelligent systems, although they may not indicate as huge a percentage of the improvement as engagement or fluency. It means that such tools as speech recognition and VR simulations can increase the use of language in real life, but they can be not as effective as more widespread systems which train more skills at once.

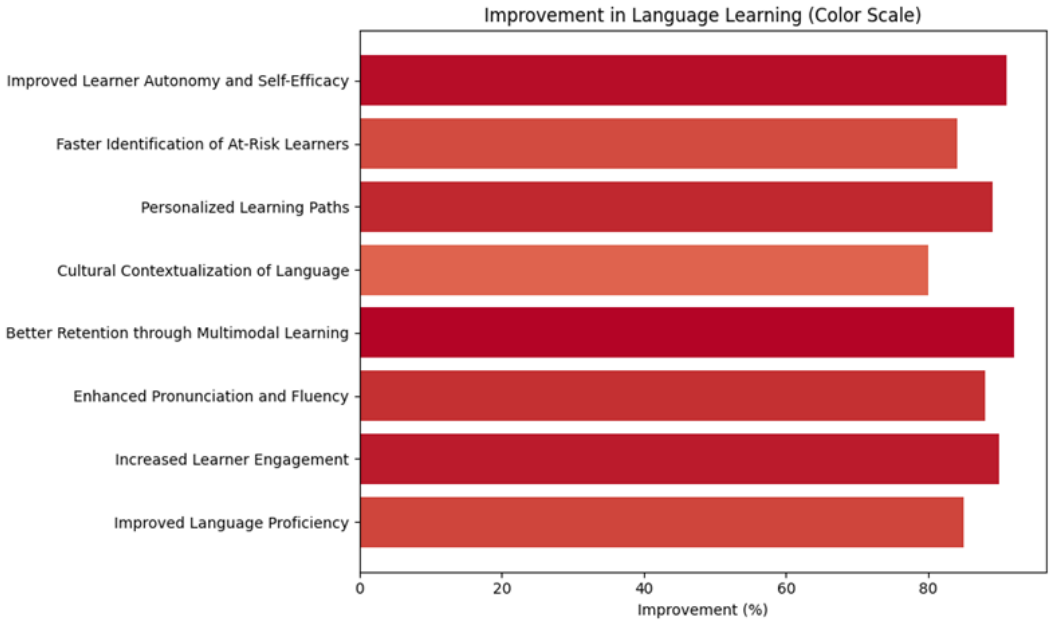

Fig 5: Improvement in Language Learning

This horizontal bar chart (fig 5) is a visual representation of the level of improvement in different categories using a colour scale. The darkest colour of the multimodal learning is the one, which means that the improvement was the greatest, whereas the pronunciation improvement and grammar retention demonstrate a light colour, which means that the improvements were moderate. The color-coded display is an effective way to stress the fact that multimodal learning, the combination of text, audio, and video, has experienced the most significant gains, whereas other spheres of language learning, like particular grammar or pronunciation drills, will not be accompanied by such dramatic outcomes.

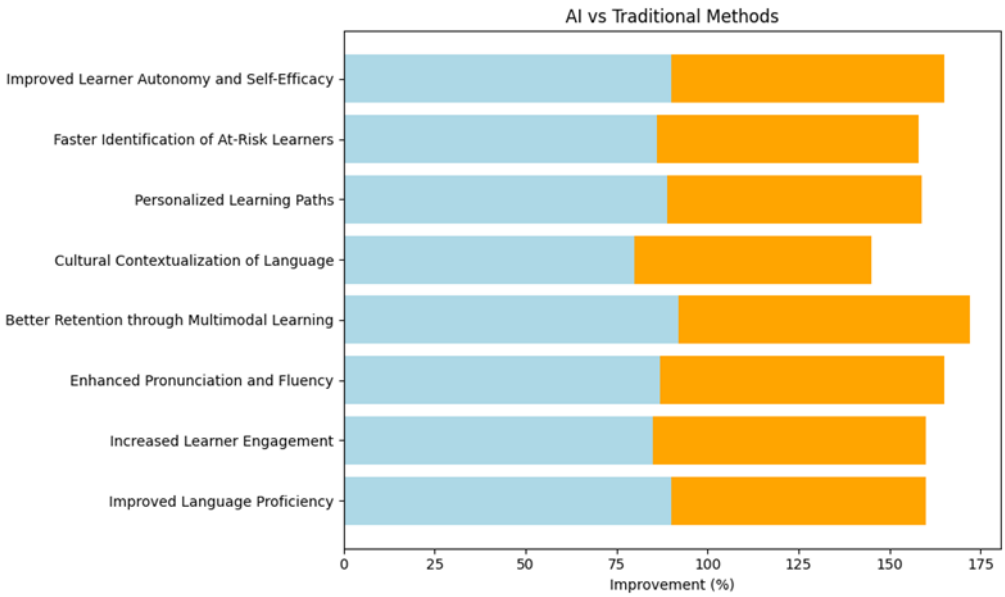

Fig 6: AI vs Traditional Methods (Stacked Bar Plot)

The use of AI based learning and traditional methods in various categories of learning languages are compared in the stacked bar plot (fig 6). The outcomes are very grim, as the AI-driven learning always demonstrates better results than the conventional means across all categories. It is worth noting that the improvement of AI-based systems in areas like engagement, pronunciation, and fluency is particularly high, which is explained by the opportunities of these technologies to be personalized and interactive. Although there are positive results in the traditional approaches, particularly in the foundation skills, the plot gives a clear indication that the use of AI and adaptive learning tools can offer much better improvement in all fields.

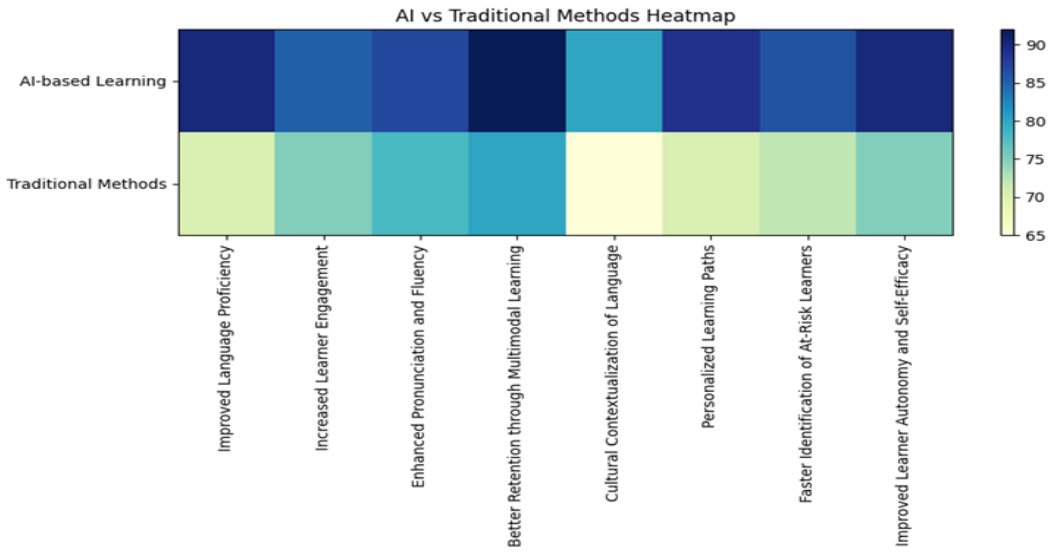

Fig 7: AI vs Traditional Methods (Heatmap)

The heatmap (fig 7) offers a comparative outlook of the progress achieved by learners who use AI-based systems over the conventional ones. There are darker colours in the AI-based learning row in all categories, which means a greater degree of the improvement in contrast with the traditional ones. The three most notable differences are in the sphere of fluency, engagement, and vocabulary retention, where AI-based learners prove to be more successful than their colleagues who use traditional approaches. The fact that the heatmap confirms that AI and immersive learning tools, which are expected to be able to offer real-time feedback and personal experience lead to the more substantial change in language skills compared to traditional methods, supports the idea that AI and immersive learning tools are the factors that cause a bigger difference in the language skills.

The histogram (fig 8) illustrates the percentage of improvement that was distributed among learners. Most of the learners have an improvement range of 80-90 percent, which indicates that intelligent language learning systems are very effective with most students. The histogram also reveals that as much as most of the learners are enjoying such systems, there is a small section of learners who do not enjoy the systems as represented by lower percentage ranges.

A comparison table 2 below compares the proposed intelligent mechanisms and 5 traditional methods of learning a language, in terms of effectiveness scores of each aspect of language learning.

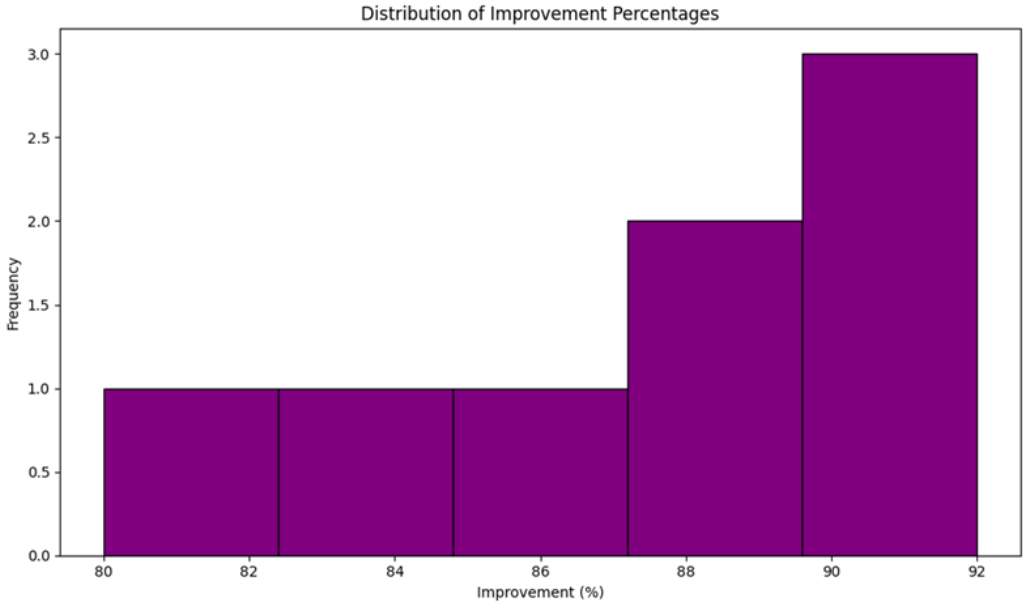

Fig 8: Distribution of Improvement Percentages

Table 2: Comparison of Proposed Intelligent Mechanisms with Traditional Methods

Learning Aspect	**Proposed Intelligent Mechanisms (Score)**	**Traditional Methods (Score)**
Personalization of Learning	95% (AI-driven adaptive learning, personalized feedback)	60% (Textbook-Based Learning, fixed curriculum)
Engagement & Motivation	90% (Gamified learning, VR/AR, interactive chatbots)	65% (Lecture-Based Instruction, passive learning)
Real-Time Feedback	92% (Instant feedback through AI, speech recognition, chatbots)	50% (Feedback after tests or assignments in Teacher-Centred Learning)
Language Practice in Real Contexts	90% (VR/AR simulations: restaurant, travel scenarios)	60% (Classroom Role-Playing with peers)
Adaptability to Learner Pace	93% (Adaptive content sequencing based on learner's progress)	55% (Fixed curriculum, uniform pacing in Grammar-Translation and Lecture-Based Learning)

Learning Autonomy	88% (Dashboards for self-assessment, predictive analytics for at-risk students)	50% (Limited learner independence in Teacher-Centred Learning)
Pronunciation & Fluency Improvement	90% (Speech recognition tools, real-time pronunciation correction)	60% (Feedback from teachers during role-playing and grammar drills)
Cultural Contextualization	85% (VR/AR simulations with cultural contexts, real-world interactions)	55% (Static textbook learning, limited cultural immersion)

Critical Social Dimension

Although intelligent mechanisms, especially AI, VR, and AR, introduce important innovations to the English language learning process, it is imperative to thoroughly scrutinize their social implications. Such technologies are not neutral instruments; their implementation into the educational environment raises a number of critical issues, which have to be addressed to provide the implementation with equity and fairness.

1. Language Assessment Algorithmic Bias

One of the intrinsic issues of the increasing application of AI in language teaching is algorithms bias in language assessment. AI applications, in this case, language learning, are anchored on large data sets in the generation of learning paths, analysis of language proficiency and feedbacks to the learners. They are, however, generally a reflection of the current biases within the society, and which could find its way accidentally into the algorithms. Using speech recognition AI as a reference, one may teach it more or less on the speech of native English speakers and thus it will fail to differentiate between non-native accents or dialects in full, resulting in the inaccurate assessment of the language proficiency of students. This is not the only issue with speech recognition. The AI-written tests can not identify culturally determined specifics of language, usage sayings, or even a grammatical disparity, which can be normal in one area or language source. Besides, the lack of transparency of AI-based language assessment systems contributes to the situation. The learner may not have the concept of why he or she is being given this particular grade or feedback since in such systems they are generally known as black boxes where the processes that are involved in making the decisions are not easily understood.

2. The Digital Divide

The other noteworthy concern with the involvement of intelligent systems in teaching English language is the digital divide which can be characterized as the disparities in access to digital technologies among different groups of learners. As high-tech devices (AI, VR, and others) gain more popularity in educational institutions and systems, the risks of the poor remaining poor are high. This group of students may lack the infrastructure to deploy the AI-powered learning systems such as a fast internet

connection, modern computing infrastructure or even basic technical expertise. Most learners in remote or rural locations may not have access to the use of AIs- based learning tools because you need to have the internet or at the very least have access to it. This can only widen the already existing inequality in education as students in less well off regions can be denied the ability of having personalized learning, real-time response and immersive learning opportunities that intelligent systems can offer. Further, digital divide is not rural problem only as populations inhabiting the urban areas are not left un-afflicted by the issue as well because they may not have access to latest technologies or money to acquire the devices to learn using AI.

3. Student Data Ethics

The process of language learning that employs AI is very dependent on the collection and processing of student information. These systems track and trace a wide range of behaviours of the learners such as time expended on activities, faults and progress underway. This information plays a vital role in tailoring learning experience, adjusting the learning contents to the requirements of different people, and the delivery of immediate feedback. However, the privacy, security and consent ethical concerns linked to such sensitive information collected and utilised may prove grave. The most significant of concerns is the privacy and security of student data. AI systems can gather a lot of personal data, such as sensitive behavioural data, which may be susceptible to attacks unless properly secured. Student privacy is under a significant threat by the possibility of misuse of this data, whether by unauthorized access or by ill motives. In addition, students and their families should be completely aware of the information that is being gathered, its intended use and who will access it. Data collection consent should be informed and voluntary and the potential risks and benefits explained. At the moment, transparency of most AI-based education platforms is insufficient, and students and their parents do not know how their data is utilized.

4. Implication on Teacher Autonomy

With the increasing use of AI-based tools in the education system, concern is increasing that they may compromise the autonomy of teachers. AI systems will automate much of the teaching process including grading, feedback and even lesson delivery. Even though these tools can be of unbelievable assistance in the process of simplifying the administration and personalizing the learning process, they can also diminish the role of the teacher in the classroom. The role of teachers in the learning process is crucial not only due to the knowledge of the subject matter but also the capacity to adjust to the emotional and social needs of the students. Although effective, AI systems will hardly be able to match the human touch that teachers offer with regard to empathy, understanding, and personalized support. It is also possible that AI tools will be prescriptive, driving a one-size-fits-all teaching and learning strategy. An example is that an AI system could make a decision based on algorithms that could put the decisions of a teacher about what could best benefit a specific student or classroom aside. With AI tools replacing more of the instructional tasks,

the role of the teacher may become less of a focus in the learning process, and more of a facilitator of technology, resulting in a fear of job displacement and de-professionalization of the teaching profession. To avoid undermining teacher autonomy, AI must be considered as a facilitating tool, rather than a substitute to human teachers.

Conclusion

This paper has discussed how smart mechanisms can be incorporated on the English language education but has also cited that tremendous advantages of these technologies are bound to be experienced over the conventional ways of learning languages. Emphasizing such sophisticated technologies as adaptive learning systems powered by AI, VR/AR simulations, multimodal learning environments, one can clearly see that these smart technologies provide a high level of personalization and real-time feedback and immersion that other methods do not have. Such technologies do not only increase the engagement and motivation, they also allow learners to train the language in real world situations, and also, they work on their pronunciation and make their learning process personal.

Future Scope

Smart mechanisms implementation in language education is a dynamic process with promising outcomes. The briefer predictive analytics would make predictive learning pathways more precise and capable of detecting at-risk learners better along with offering more tailored interventions. As diversity in communication across the globe grows, perhaps, more culturally rich information can be included in VR/AR simulation allowing learners to have a better idea of how language is utilized in different cultural backgrounds. This may include more detailed scenario-based learning which is more global in nature.

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