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Smart AI-Powered Language Learning App

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Abstract:

Language learning is a crucial aspect of life, and AI technology has revolutionized teaching and learning. New approaches like Dulingo, Babbel, and Memrise have emerged to improve language proficiency. However, the use of AI in language learning apps is often overlooked. This paper analyzes several popular language learning apps and their presence of AI. The results show that none of the analyzed apps use machine learning, artificial intelligence, or deep learning, and they are based on predefined algorithms that do not fully utilize computational power. The paper suggests possible solutions and practical advice on how to implement AI in these apps, making it important for education innovation in the 21st century. The findings suggest that AI should be used in a way that fully utilizes the computational power available, rather than relying on predefined algorithms. This makes AI a valuable tool for language learning and education in the 21st century.

Keywords: Artificial Intelligence (A.I.), AI Powered Learning, Language Apps, Mobile Apps, Language Education.

1. Introduction

Artificial intelligence (AI) is a machine-based simulation of human intelligence processes, with applications in expert systems, natural language processing, speech recognition, and machine vision [1]. AI plays a vital role in language proficiency, focusing on four essential elements: listening, speaking, reading, and writing. Learning apps like Dulingo and Babbel provide tests, evaluations, and scores, providing effective guidance for language aspirants [2,3]. Ubiquitous mobile devices, particularly smartphones, have a significant impact on human life, especially for Generation Z, who use them daily for entertainment, communication, and work [4,5]. Educational apps can implement learning aspects while using these devices. As the Internet of Things (IoT), artificial intelligence (AI), and smart cities and homes continue to evolve, educators must adapt to keep pace with technological progress and ensure global competitiveness. Educators and students must consider the different approaches to acquiring competencies and skills, as well as the tools used for evaluation of online information. This paper discusses the use of computational power in mobile apps for language education, highlighting the potential of artificial intelligence in marketing, such as Amazon and Google. Computer algorithms are increasingly used in personalized offers, allowing businesses to better understand their customers and provide better customer service. AI enhancements can improve app sales, as public recognition and user satisfaction lead to increased demand and profitability. The nature of language involves interest, listening, practice, and correction of errors, as illustrated in Figure 1 [6,7,8].

Figure 1: The Nature of Learning

2. Modern Trends in AI-Powered Language Learning

The modern world requires English language skills and proficiency, making it the universal language. Language learning apps, such as Babbel, Busuu, Memrise, Pimsleur, Rosetta Stone, and Duolingo, are crucial tools for improving pronunciation, listening, and practicing language skills. The diagram in Figure 2 highlights the importance of learning apps and the influence of AI [9]. These apps offer practice spaces, native pronunciation styles, and correcting measures, allowing learners to improve their skills quickly. Additionally, they provide motivation through tests and scores, allowing learners to evaluate their growth and proficiency. The rise of language learning apps has significantly influenced the sector, with apps like Babbel, Busuu, Memrise, Pimsleur, Rosetta Stone, and Duolingo growing rapidly, attracting millions of users worldwide [10].

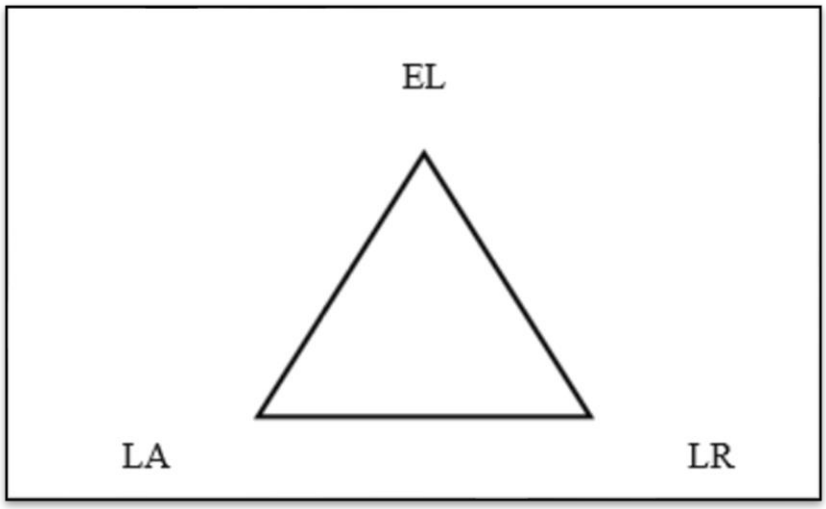

Figure 2: The Learning Triangle (EL: English Language, LA: Learning Aspirants, LR: Learning Resources)

3. Use of Artificial Intelligence in the field of Education:

Artificial intelligence (AI) is revolutionizing education by utilizing big data processing, implementing IT into the educational process with AI aspects, and enhancing personalized learning. These aspects are interconnected and cannot be separated. Big data processing and data mining present new challenges for educators but also provide a rich source of data for learner profile creation [11]. Education informatization 2.0 is crucial for ensuring solid educational innovation and active promotion of new theories and practices. AI must be implemented in education platforms like sales channels like Amazon, allowing for solid educational innovation and active promotion of new theories and practices [12]. Personalized learning will be based on intelligent learner information processing, where big data algorithms create a learner's profile, presenting targeted information to the learner. This tailor-made solution is particularly useful for part-time students and distance learning during health crises, such as the coronavirus crisis in 2020 [13,14].

This paper focuses on the appropriate use of computational power in mobile apps used in language education. Artificial intelligence has already been massively used in marketing, such as Amazon and Google, in ways we have never experienced before. Computer algorithms know us better than we know ourselves and are widely exploited in personalized offers of business to customer services. Delivering more personalized content is essential in direct marketing processes, and these computational aspects will be used more often to optimize services for improved sales and profitability. The same principle can be applied to mobile apps, where personalized content optimized by AI brings benefits to users by tailoring educational content to their needs [15,16,17].

4. Significance Of AI Tools in Language Learning:

AI tools, such as Language Learning Apps (LLA), are revolutionizing language learning by offering personalized learning plans, continuous assessment, and a tutoring system that supports language experts. These tools provide tailored lessons, instant feedback, access to diverse resources, enhanced engagement, and exposure to native-like pronunciation and dialects. They also offer a vast range of learning materials, including multimedia content, real-world contexts, and interactive exercises. AI-powered translation tools, such as Google Translate, offer real-time translation and contextual understanding, enhancing comprehension and communication.

Mobile learning and cost-effective options make language learning more accessible, showcasing native-like pronunciation, exposing learners to different dialects, providing cultural context, and contextual examples. AI tools aid in developing writing and comprehension skills through essay grading and reading comprehension. Additionally, AI tools facilitate social and collaborative learning by matching learners with native speakers for language exchange and enabling group projects and discussions. Overall, AI tools are revolutionizing language learning by providing a more personalized, accessible, and cost-effective learning experience for language aspirants.

5. Functions of AI-Powered Language Learning Apps:

LLA (Language Learning Apps) are AI-powered tools that enhance four basic language skills, making the learning process more efficient, positive, and accessible, thereby breaking the boundaries of space and time. Language learning apps are designed to help learners take tests, accept tests, and research English language skills. They have three main sections: taking tests, accepting tests, and researching. These apps offer various functionalities to enhance the learning experience, such as interactive lessons, speech recognition, vocabulary building, grammar and syntax training, listening comprehension, reading comprehension, writing practice, cultural insights, progress tracking, adaptive learning, live tutoring, offline access, and community and social features [18]. AI has significantly impacted the language learning process, leading to more advanced features.

These advanced features are as follows:
- Apps aid learners in taking, accepting, and researching English language skills.
- They consist of three sections: taking tests, accepting tests, and researching.
- Tests cover listening vocabulary, speaking, sentence formation, evaluation, and scoring.
- Scores serve as incentives for further research or practice.
- Some apps enhance language interest and correct errors.
- Apps offer convenience and peer review for learners to process and improve communication skills.
- Popular for their convenience, accessibility, and effectiveness.
- Features include interactive lessons, speech recognition, vocabulary building, grammar and syntax training, listening comprehension, reading comprehension, writing practice, cultural insights, progress tracking, adaptive learning, live tutoring, offline access, and community and social features.

6. The Impact of AI-Powered Apps on Second Language Learning:

Human-Computer Interaction (HCI) is a crucial aspect of human interaction with technology, as language plays a significant role in user interface design. Natural Language Processing (NLP) is a field of artificial intelligence that focuses on the interaction between computers and humans using natural language, enabling the development of algorithms and models for human-like text comprehension. Machine translation technologies like Google Translate use algorithms to automatically translate text from one language to another, breaking down language barriers and facilitating global communication and collaboration. Voice assistants like Alexa and Siri demonstrate the integration of language and technology by relying on NLP to interpret spoken language and respond appropriately. The effectiveness of voice assistants hinges on their ability to understand and generate natural language in a way that feels intuitive and responsive to the user [19].

AI-powered applications play a significant role in enhancing Second Language Acquisition (SLA) by providing personalized, accessible, and interactive learning experiences. Key roles these apps play include adaptive learning, progress tracking, interactive and engaging content, real-time language translation, conversational practice, accessibility and convenience, cultural context, data-driven insights, motivation and retention, and habit formation. Personalized learning paths are achieved by AI analyzing a learner's progress and tailoring content according to their strengths and weaknesses. Progress tracking provides insights into learning patterns and suggests areas of focus. Interactive and engaging content, such as speech recognition and gamification, make learning more engaging [20]. Data-driven insights help educators adjust teaching methods and content accordingly.

7. AI-Powered tools at Present for Language Learning:

Chatbots, also known as chatterbots, dialogue systems, conversational agents, or virtual assistants, are software applications that interact with users via chat and stimulate human conversations. They have been around since the 1960s when Weizenbaum developed ELIZA, a psychotherapist bot. Web-based chatbots have been used for several decades and are commonly integrated into messenger apps like Facebook Messenger. Chatbots can have human-like appearances with social life-like characteristics, using techniques such as Natural Language Processing (NLP), pattern matching, and neural machine translation to achieve their goals. The growing interest in chatbots is attributed to their potential to enhance L2 and FL learning in innovative ways.

Duolingo is a popular free mobile app that has shown significant improvements in language abilities. It asks whether the learner already knows anything about the language and provides a placement test if so. Duolingo offers 10 to 15 exercises in each lesson, but does not provide any grammatical explanations. AI-powered tools like Codecademy, LeetCode, HackerRank, Repl.it, Kaggle, PyCharm (with GitHub Copilot), and Mimo are designed to make learning coding languages more accessible, efficient, and personalized. These tools personalize the learning experience by adapting content and challenges based on the learner's progress, skill level, and specific needs. AI provides real-time feedback on coding exercises, helping learners understand their mistakes and correct them on the spot. Progress tracking helps track the learner's progress over time, offering insights into their strengths and weaknesses.

In conclusion, chatbots play a crucial role in various industries, providing tailored education, real-time feedback, progress tracking, efficiency, and automation. By leveraging AI, these tools cater to learners at different levels and help them develop their skills in a structured, supportive environment.

8. Future Implementation:

The future development of AI in mobile apps for learning a foreign language is expected to be abrupt, as seen in other areas of human endeavour. This lack of progress is due to lower profitability opportunities connected to these apps. Implementing AI into these apps would be quite demanding in terms of time and money, but in the long run, the benefits are substantial for both the user and the company offering the solution with AI. As mobile apps and m-Learning become more significant, higher education institutions will embrace their use in their curricula, and individuals and companies will be willing to pay more for these educational apps. To be attractive and successful, any mobile app must implement AI, deep learning, or machine learning, as it will serve as a benchmark for other apps.

The most important recommendation regarding the use of AI is to implement it in a minimalistic way so that it is not a costly solution. However, this simple implementation can significantly increase the efficiency of the app regarding its learning impact. The most important aspect of AI implemented in language apps would be testing the user based on their progressive development, such as modifying and repeating grammar exercises until the user can successfully apply the given rules. This is a substantial benefit of AI in mobile apps, as no human teacher can process so much information about individual students and the words or grammar each of them needs.

To summarize, the paper recommends implementing AI in language apps as soon as possible, implementing AI in its simplest form to save money and time, and improving the AI in language apps over time to ensure it is not a costly

solution. The future development of AI in mobile apps for learning a foreign language will likely be abrupt, but it is expected that it will provide substantial benefits for both users and companies offering AI solutions.

Conclusion:

Artificial intelligence is significantly impacting language learning, particularly English, and is expected to lead to significant advancements in employment and society. Language learning apps have revolutionized teaching and learning, with future generations relying on these apps for improved learning outcomes. AI guides a knowledgeable society, but it is not a silver bullet for language learning. The paper emphasizes the importance of implementing AI, deep learning, and machine learning in language learning apps. However, the current situation shows that AI applications are nearly missing, despite the significant focus on marketing and data mining in other human endeavours.

It is crucial to emphasize the importance of AI implementation and utilization in language education to maintain its competitiveness and sustainability in the global world. IT companies should use AI as an opportunity for enhanced profitability, while higher education institutions should be prepared to develop AI-enabled devices and apps for their educational processes. Higher education institutions should be ready to assist in the development of AI-enabled devices and apps.

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