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Lifelong Lifewide Learning

RICERCHE

Progetto AI@School: Strumenti di Intelligenza Artificiale a supporto dell'attività docente.

AI@School Project: Artificial Intelligence tools to support teaching activities.

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ABSTRACT ITALIANO

L'integrazione dell'Intelligenza Artificiale (IA) nell'apprendimento della lingua inglese ha trasformato l'educazione universitaria, offrendo strumenti personalizzati e interattivi. Questo studio analizza le applicazioni, i benefici e le sfide dell'IA nel supporto all'apprendimento linguistico, esaminando piattaforme adattive, chatbot e strumenti di riconoscimento vocale. Un'indagine esplorativa condotta presso l'Università di Bari evidenzia un'ampia adozione e coinvolgimento degli studenti nell'uso dell'IA, sebbene emergano sfide legate all'accessibilità e all'interazione umana. I risultati suggeriscono che l'IA migliora la competenza linguistica, ma richiede un'integrazione equilibrata con metodi tradizionali per un'esperienza di apprendimento efficace e inclusiva.

ENGLISH ABSTRACT

The integration of Artificial Intelligence (AI) in English language learning has transformed university education by providing personalized and interactive tools. This study examines the applications, benefits, and challenges of AI in language learning, focusing on adaptive platforms, chatbots, and speech recognition tools. An exploratory survey conducted at the University of Bari highlights the widespread adoption and engagement of students in using AI, although challenges related to accessibility and human interaction remain. The findings suggest that AI enhances language proficiency but requires a balanced integration with traditional methods to ensure an effective and inclusive learning experience.

Introduzione

In recent years, the advent of Artificial Intelligence (AI) has profoundly transformed several sectors, including education. AI has emerged as an essential tool to facilitate English language learning among students in higher education. This article examines the applications, benefits and challenges of using AI to enhance English language learning among university students. The applications of AI in this field range from personalised learning platforms to advanced natural language processing tools. After analysing the opportunities and difficulties related to the integration of AI in language learning, the contribution presents a descriptive analysis of the data collected from an exploratory survey, conducted among the students of the English Language Laboratory of the second year of the Primary Education Sciences course at the University of Bari 'Aldo Moro'. The survey aims to analyse the use of technological supports and AI in English language learning.

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Applications of AI in English language learning

Applications of AI in language learning include a wide range of tools and platforms designed to enhance the educational experience. A prominent example are AI-powered language learning apps such as Duolingo and Babbel, which use machine learning algorithms to customise lessons based on the learner's progress and level of proficiency (Gonzalez, 2020). These apps adapt to the user's learning pace, offering a tailored curriculum that meets individual needs (Chassignol *et al.* 2018). This personalised approach helps maintain learner *engagement* and motivation, which are crucial for language acquisition (Huang *et al*. 2019).

For example, Duolingo employs a gamified learning environment, incorporating elements such as series, rewards and challenges to make the learning process more interactive and enjoyable (Munday, 2016). Babbel, on the other hand, focuses on the practical use of language, offering dialogue-based exercises that mirror real conversations (Dettmers *et al*. 2021). Furthermore, AI-based *chatbots* offer real-time conversational practice, providing immediate feedback and corrections, thus improving students' speaking and listening skills (Mubin *et al*. 2019). These chatbots simulate human conversations, allowing learners to practice language skills in a low-pressure environment (Winkler & Söllner 2018). They can engage in various topics, helping learners expand their vocabulary and improve their fluency (Fryer *et al.* 2017).

The immediate *feedback* provided by these chatbots is invaluable as they help learners recognise and correct errors on the spot, reinforcing correct language use and building confidence (Lee *et al*. 2020). The AI technologies are also used in pronunciation training. Tools such as Speechling and Elsa Speak use speech recognition technology to analyse learners' pronunciation and provide detailed feedback on how to improve (Liakin *et al.* 2017). This functionality is particularly useful for learners who do not have access to native speakers or language tutors, as it offers a reliable alternative for practising spoken language (Lu, 2019). Another relevant application of AI in language learning concerns content generation and skills assessment. AI is able to create diverse and contextually appropriate language exercises, offering learners numerous opportunities for practice (Bii, 2013). Furthermore, it can quickly and efficiently assess both written and oral tasks, overcoming the effectiveness of traditional methods and providing detailed *feedback* on student performance (Mayfield & Oh, 2020).

This data-driven approach allows for more accurate monitoring of student progress and identification of areas requiring further improvement (Zou et al., 2019). Furthermore, AI-based translation tools such as Google Translate have had a significant impact on language learning. Such tools facilitate comprehension and communication between different languages, helping learners to grasp the meaning of unfamiliar words and phrases (Turovsky, 2016).

Although not perfect, the continuous improvement of AI translation algorithms has made these tools increasingly reliable and useful for language learners (Wu *et al*. 2016). Integrating AI into language learning not only improves the effectiveness of language instruction, but also democratises access to high-quality educational resources. Learners from various backgrounds and regions can benefit from these advanced tools, breaking

down barriers to language acquisition and promoting global communication (Kessler 2018).

Opportunities and challenges of AI in language learning

The integration of AI in language learning offers numerous benefits. First of all, AI enables learning experiences tailored to the individual needs of learners, which can be more effective than traditional uniform approaches (Zou *et al,.* 2021). AI systems can adapt to the learner's pace, providing customised exercises that target specific areas of difficulty. This adaptability is crucial in language learning, where individual progress can vary significantly. For example, an AI-powered app could identify a learner's difficulty with verb conjugations and subsequently offer more targeted practice in that area. Such customisation ensures that learners receive the precise support they need to effectively improve their skills (Chen *et al,.* 2020).

Artificial intelligence tools often incorporate elements of *gamification*, making learning more engaging and motivating for learners (Sokolova *et al.*, 2020). The *gamification* introduces typical game mechanics, such as points, badges and leaderboards, into educational activities, significantly increasing student motivation and engagement. An example is Duolingo, which uses rewards and challenges to stimulate daily practice. These elements not only make learning more fun, but also foster constancy and perseverance, qualities that are fundamental for success in language acquisition. Another significant advantage is the availability of 24/7 learning support. AI-powered platforms provide learners with the flexibility to practise and learn when it is most convenient for them, outside traditional classroom hours.

This continuous access to learning resources is particularly useful for non-native speakers of English, who may require additional practice to achieve fluency (Huang & Chen, 2019). For example, AI-powered *chatbots* can simulate conversations, offering real-time feedback and corrections, thus helping learners practice speaking and listening skills at any time. This level of accessibility ensures that learners can learn when they wish, facilitating a more flexible and accommodating learning programme (Fryer *et al.*, 2017). AI in language learning provides immediate *feedback*, an essential element for effective learning. In traditional contexts, *feedback* can be delayed due to the teacher-student ratio and time constraints. In contrast, AI-based systems are able to instantly assess learner performance, providing immediate corrections.

This helps learners to quickly correct errors and better understand the correct use of language. This immediate response cycle accelerates the learning process and improves the memorisation of concepts (VanLehn, 2011). AI technologies also support pronunciation training through advanced speech recognition algorithms. This capability is particularly useful for learners who do not have access to native speakers for practice. By receiving accurate and immediate corrections, learners can hone their pronunciation skills, leading to more accurate and confident spoken language (Liakin *et al.*, 2017). Despite its many advantages, the adoption of AI in language learning also brings some challenges. One of the main concerns is the digital divide: learners from disadvantaged socio-economic

backgrounds may not have the appropriate technology or a stable internet connection (Reddy & Sharma, 2020).

This disparity risks amplifying existing educational inequalities, limiting some students' access to the benefits offered by AI-based learning tools. Ensuring equitable access to technology therefore becomes crucial to ensure an effective and inclusive implementation of AI in education. Issues related to *privacy* and data security also emerge. AI-based platforms often need access to personal information to deliver personalised learning experiences, raising concerns about how this data is managed, stored and protected. The possibility of breaches or misuse of personal information can undermine trust in AI technologies and hinder their adoption (Shin & Choi, 2015). It is crucial that developers and educational institutions adopt robust security measures and implement transparent data management policies to address these concerns. Despite technological advances, AI-based tools cannot fully replicate the nuances of human communication or the rich context provided by cultural experiences. Therefore, it is essential that educators strike a balance between using technology and ensuring that students have ample opportunities for face-to-face communication and cultural learning (Fryer & Carpenter, 2020). This could involve integrating AI tools with traditional teaching methods, offering students opportunities for conversational practice with native speakers, either in person or through virtual exchanges. Although artificial intelligence can offer valuable support in language learning, it cannot replace human interaction and cultural immersion, which remain fundamental elements for comprehensive language acquisition. This could involve integrating AI tools with traditional teaching approaches, offering learners opportunities for conversational practice with native speakers, either through in-person meetings or virtual exchanges .

The exploratory survey: a descriptive data analysis

Methods and sample

This study presents a descriptive analysis of data collected from an exploratory survey designed to investigate the use of technological aids and AI in English language learning among university students. Specifically, the research examined the frequency of AI use, the level of student engagement, the ease of practicing English outside the classroom, motivation, the propensity to recommend AI-based tools, and the impact of these tools on improving language skills. The survey instrument was a semi-structured questionnaire developed through Google Forms and distributed via e-mail to the students of the 2nd year English language laboratory of the Faculty of Education of the University "Aldo Moro" of Bari. A self-selected sample of 103 students participated in the survey. Data analysis was carried out using descriptive statistical techniques with the aid of Microsoft Excel. In particular, the frequency distributions of the answers were generated and subsequently transformed into relative and absolute frequency percentages. The sample consisted of 97% females and 3% females, with 68% being aged between 19 and 25 years.

Frequency of AI use

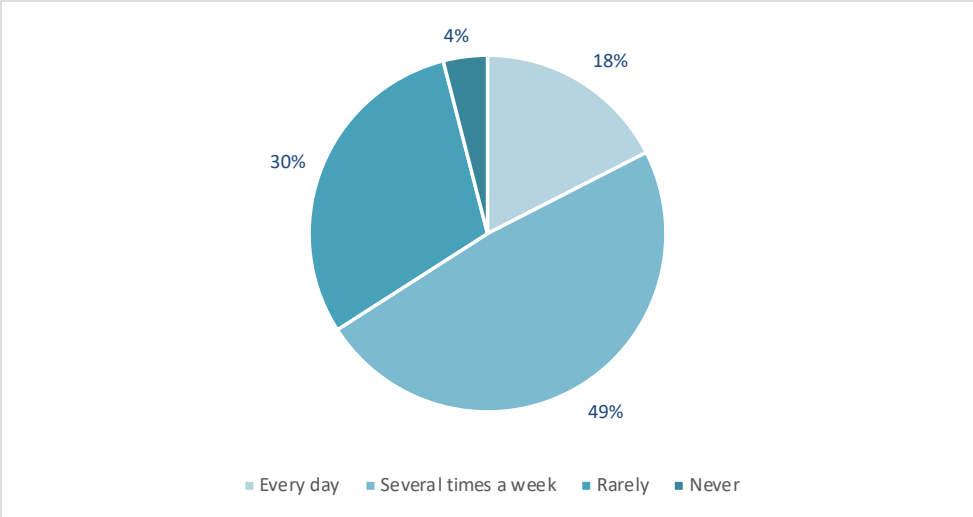

FIG. 1: FREQUENCY OF AI USE

The analysis of the collected data shows the frequency of use of AI among students for English language learning. The majority of users, 49%, use technology on a daily basis, showing a strong dependence on technological tools to support their learning. A further 30% of students use technology several times a week, demonstrating frequent, though not daily, interaction. Finally, only a small percentage, 4%, never use AI tools, signaling a possible lack of access, a preference for more traditional methods or a lower propensity to adopt digital tools.

Greater involvement in learning thanks to AI

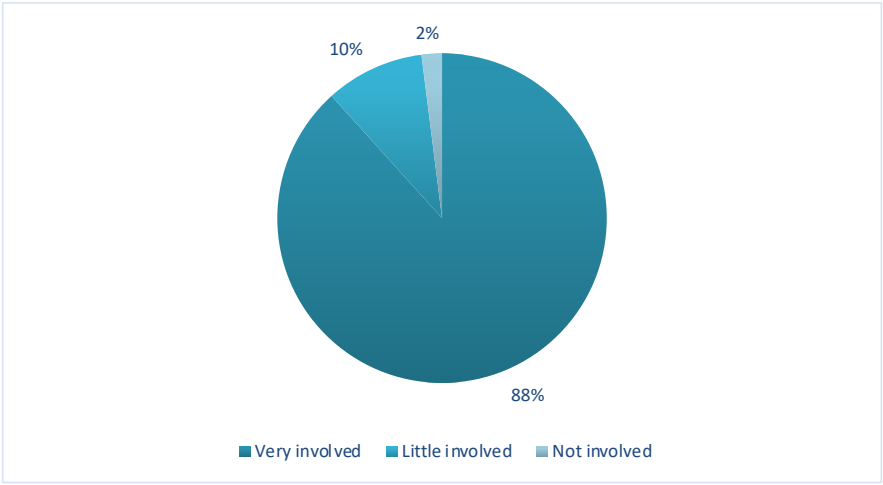

FIG. 2: INVOLVEMENT IN LEARNING

A significant proportion of students (88%) are highly involved in technology-enhanced learning and AI, demonstrating strong engagement and active participation. A further portion (10%) of students report moderate involvement, suggesting that most students find the use of AI to enhance their learning useful. However, only a small minority (2%) show no involvement, highlighting the presence of some resistance or difficulty in integrating AI technologies into the learning process.

Ease of practising English outside the classroom

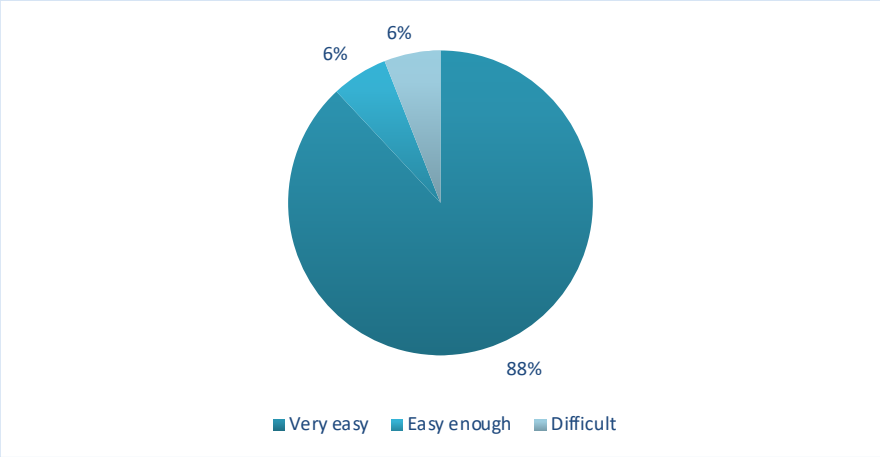

FIG. 3: PRACTISING ENGLISH OUTSIDE THE CLASSROOM

Most students find it easy to practise English outside the classroom, with 88% finding it very easy and 8% finding it fairly easy. However, a not insignificant 8% find it difficult to practise English, describing it as difficult or very difficult. This figure highlights the need to provide more support to facilitate access to language practice, especially for those who encounter more obstacles.

Propensity to recommend AI tools to other students

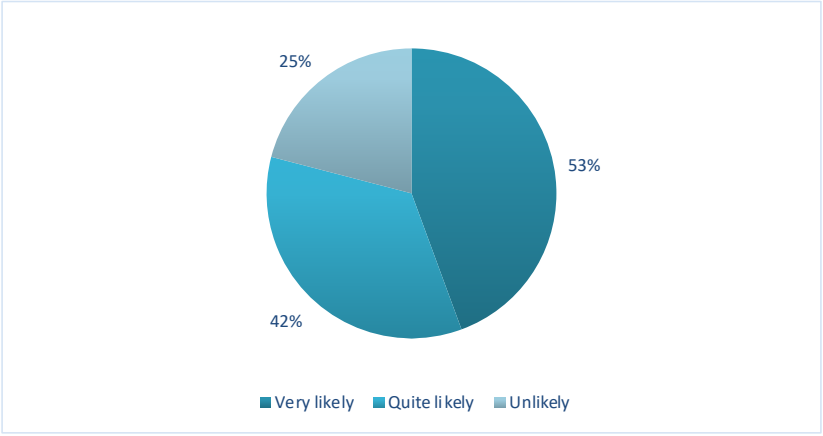

FIG. 4: PROPENSITY TO RECOMMEND AI TOOLS

About half of the users (53%) would recommend AI tools for learning without hesitation, indicating a high level of satisfaction. In contrast, only a small percentage (25%) are reluctant to recommend such tools, indicating an overall positive perception of AI among learners.

Learning pleasure through AI chatbots

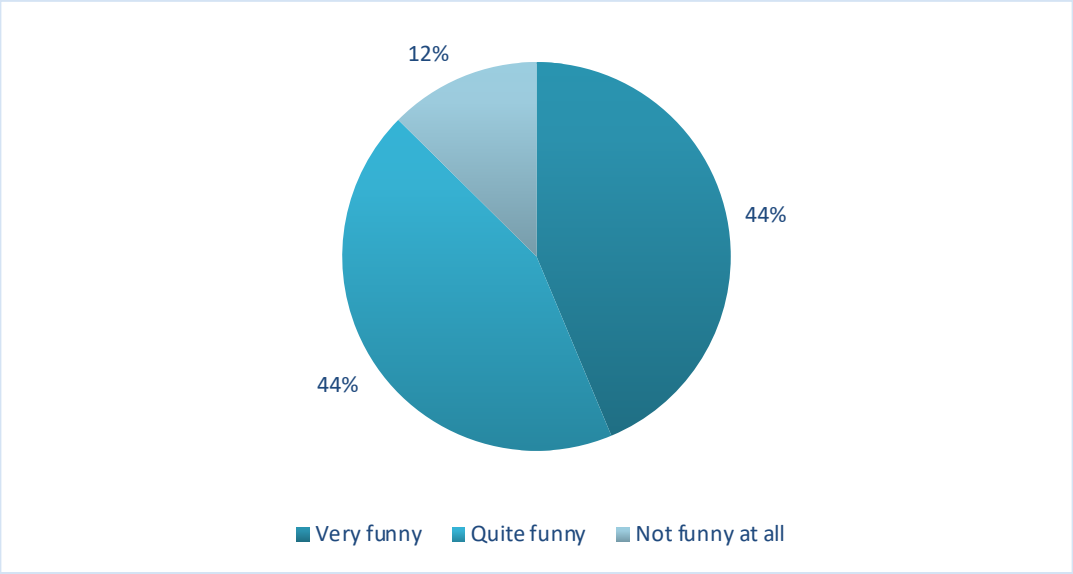

FIG. 5: LEARNING PLEASURE WITH AI CHATBOTS

The majority of students consider learning with AI-based *chatbots* enjoyable, with 44% finding it very enjoyable and 44% describing it as quite enjoyable. However, an overall 12% find the experience little or no fun, suggesting there are areas where AI-based *chatbots* could be improved to increase user engagement.

Increasing linguistic competence through the use of AI chatbots

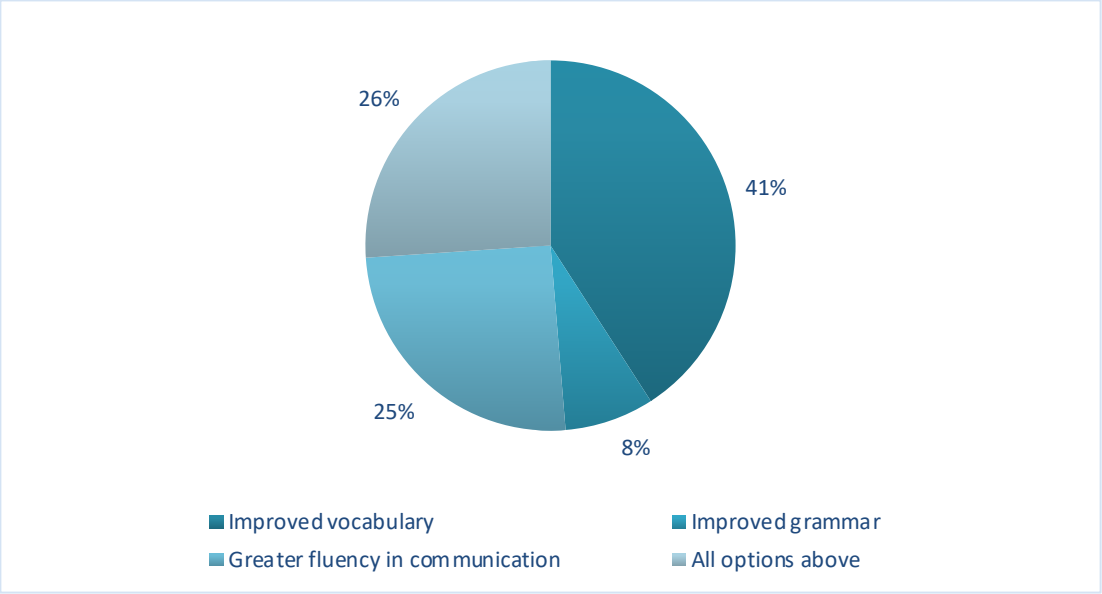

FIG. 5: IMPROVING LANGUAGE SKILLS WITH AI CHATBOTS

Students perceive a significant improvement in their language competence thanks to AI chatbots, in grammar, vocabulary and fluency

Conclusions

Research shows that the technology is widely adopted and perceived as useful by most users. The data show a high frequency of use and strong involvement in AI-supported learning, suggesting a positive trend towards its increasing integration in education. Regarding the impact of AI chatbots, they are generally welcomed and considered effective for language learning. However, the analysis reveals that there is still room for improvement to further increase user engagement and satisfaction.

Although the results are generally positive, there is a need for action in some areas of improvement. A significant proportion of users still find it difficult to practice English outside the classroom and do not find AI chatbots particularly entertaining or effective. This suggests that there are opportunities to make these technologies more accessible and efficient in facilitating language learning. The use of AI in English learning for higher education students presents a transformative opportunity to improve language acquisition through personalized, flexible and engaging methods.

However, addressing the challenges of accessibility and maintaining a balance with traditional learning methods is crucial. As AI technology evolves, its integration into language education is likely to become increasingly sophisticated, offering even more innovative solutions for learners worldwide. In conclusion, AI applications in language learning have transformed the educational landscape by providing personalized, interactive and efficient learning experiences.

From language learning apps and *chatbots* to pronunciation tools and intelligent tutoring systems, AI continues to revolutionize the way languages are taught and learned. As technology advances, the potential of AI to further improve language education is immense, promising even more innovative and effective learning solutions in the future. It is essential to address the challenges of the digital divide, data privacy and the need for human interaction. By carefully addressing these challenges, educators can optimize the benefits offered by AI while ensuring a holistic and inclusive learning experience that engages all learners.

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