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Use of AI in a World Language Classroom

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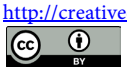

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Abstract

In recent years, digital technology and Artificial Intelligence (AI) have revolutionized the landscape of language learning, offering unprecedented opportunities for learners to engage with foreign languages in diverse and interactive ways. This scholarly article investigates the efficacy, advantages, and challenges of learning foreign languages online through various platforms: drawing on empirical research and theoretical frameworks from education, linguistics, and technology studies, the article examines the impact of online language learning on linguistic proficiency, learner motivation, cultural competence, and accessibility. Additionally, it explores the role of AI, digital tools, such as language learning apps, virtual classrooms, and multimedia resources, in facilitating language acquisition and intercultural communication.

Keywords

Artificial Intelligence, World Languages, Online Language Learning, Education, Linguistics, Technology, Motivation, Cultural Competence and Accessibility

1. Introduction

Many will attest that learning a foreign language is still a challenge; however, there are many resources besides the traditional classroom. Taking a foreign language class online seemed impossible 20 years ago, yet here we are. The conveniences and opportunities are limitless. Digital technology has revolutionized language learning, opening up new and unimaginable ways for learners to engage with foreign languages. Online platforms offer interactive exercises, multimedia materials, and virtual immersion experiences.

This article analyzes the potential of AI in online language learning, exploring its potential benefits, challenges, and implications for language education in the

21st century. This article focuses on using AI in second language acquisition and education, AI-powered educational software, and apps like intelligent tutoring, support, and automating administrative tasks. The focus of the article discusses the use of AI in grading and assessments, data privacy, and security. In addition, the article explains. the digital divide and equal access to AI resources, as well as specific barriers to using AI.

1.1. Advantages of Learning World Language Online Using AI

One of the most important advantages of online language learning is its accessibility. Unlike traditional classroom settings, which may be affected by time, space, and financial resources, online platforms provide learners access to language learning materials anytime, anywhere. The online format provides learners with personalized experiences to suit their schedules and preferences, democratizing access to language education. Regardless of whether one is working full time, traveling, or deployed, they can all learn a foreign language as the same resources are shared.

Today, there are many resources and tools to support learners at various proficiency levels and accommodate diverse learning preferences and disabilities. Many learners are learning language through apps and gamification. The gratification of seeing one's progress is gratifying. Many tutoring services and virtual classrooms provide learners with peer and instructor interaction and foster a sense of learning community.

1.2. AI in Second Language Acquisition

Many learners consider second language acquisition (SLA) a complex process. However, with artificial intelligence (AI), learning and mastering languages will be enhanced (Subramanian et al., 2020). The promise and abilities of AI for the learners of a foreign or a modern language will create a more personalized experience along with interactive activities, allowing for an interactive experience. According to Kumar Betal (2023), AI-powered tools used in traditional classroom settings allow students to develop autonomy when deciding to learn a foreign language. Many AI tools provide learners with conversational practice and immediate feedback.

The study of Second Language Acquisition impacted by AI provides learners with personalized instruction and immediate feedback. Bisson et al. (2019) shared the positive feedback of intelligent tutoring systems (ITSs). The ITSs employ AI algorithms to personalize content for learners and to meet their individual needs. The ITSs also helped learning with motivation and engagement in the learning process (Liu et al., 2021). Many AI tools help learners achieve proficiency and influence when learning any foreign language. Many AI speech recognition tools help learners with pronunciation, fluency, and accuracy.

1.3. Transforming Language Learning through Technology—The Rise of AI

AI's future in education will look very different ten years from now due to groundbreaking technological innovations. AI's presence in the classroom will increase

usage as more educational institutions expand their learning programs. As AI expands in the classroom, there will be opportunities to introduce gamified lessons and programs created to meet the needs of individual students. Differentiated instructions can create unique lessons that cater to individual student's needs for those students who may not engage with the learning materials (Promethean, 2023).

AI is already being used to grade student work. AI programs can detect if a paper is plagiarized or written with the assistance of AI programs such as ChatGBT (Promethean, 2023). These programs can greatly reduce the time educators spend grading and reviewing assignments. As these programs grow, they will apply to more complex projects.

AI tutors can impact students' learning through flashcards, knowledge check exams, and other practice activities. Text-to-speech and speech-to-text can assist in learning new languages by providing examples and phrases. Tutors can combine these technologies with traditional tutors to create a hybrid session customized to each student (Promethean, 2023).

2. Rethinking Education—The Role of AI in Modern Education

The goal of instructors is to revolutionize the educational experience and create a personalized approach that is unique to each student. AI technology can analyze and create programs tailored to student's needs, capabilities, and preferences. Unlike traditional language processes, AI can assess students' needs and create customized learning materials based on their learning style and how they best absorb the information, such as visual, auditory, reading, writing, and kinesthetic approaches (Just Think AI, 2024).

The algorithms used by AI can tailor the learning experience based on each individual's progress and how they interact with the materials. AI can analyze the student's learning patterns and create customized programs to target the individual's needs. AI can suggest learning materials, content, and instruments that match the interests and capabilities of the students. The best thing about AI is that teaching assistants are available 24/7. Ai also features programs such as text-to-speech and speech-to-text to assist students with learning disabilities and special needs. As AI technology advances, instructors can create a program tailored to each student's needs.

2.1. AI Tools for World Language Class

AI has opened up a whole new world in modern education. Students' skill levels can be assessed in real time, allowing educators to tailor instructions and content to personalize learning based on the student's needs (University of San Diego, 2024). Providing a custom pathway helps students learn new concepts at their own pace. Speech recognition tools can assist students with hearing disabilities and dyslexia in converting text to speech and speech to text so they can fully participate in the classroom. AI analytics can analyze student data, providing

insight into student performance to address gaps. AI uses gamification to engage students, rewarding and motivating student's positive actions with badges. Intelligent tutoring systems offer personalized feedback, improving student performance.

AI can also aid in creating immersive 3D classrooms that enhance learning with interactive and experiential learning, delivering engaging content through interactive lessons and providing real-time feedback. Students can participate in extracurricular activities from anywhere, improving engagement. Students can also explore different parts of the world and participate in virtual tours of colleges, which adds to the student's cultural understanding. AI will enhance education by making global classrooms available to all students, creating equal access for everyone.

Currently, there are many AI-based apps helping learners learn any language. These apps follow the algorithms and provide learners with personalized learning experiences. The following apps offer specific activities focusing on learners' progress, providing feedback based on progress. Many apps offer learners activities such as speech recognition, vocabulary practices, grammar drills, and listening and reading comprehension activities. Duolingo, Google Translate, Rosetta Stone, Quizlet, Lingvist, Babbel, and Memrise are the most commonly used. Many apps help with fluency, accuracy, and communication skills, including Mondly, Rosetta Stone, Elsa Speak, Speechling, Italki, and Pronunciator.

Language translation systems also help students improve their understanding of lexicon and syntax. Chatbots and conversation simulators like Replika, Mitsuku, and ChatGPT provide learners with pronunciation, grammar, and vocabulary through text and voice conversations. The AI language platforms and apps often use a Gamification environment to gauge and retain learners.

AI also has some limitations. Some AI systems need to be more accurate and may provide learners with inaccurate responses, which may hinder learner's learning experience. AI language apps and platforms offer minimal to no human-to-human interaction. There is also a concern regarding data privacy and security, as private information could be compromised.

2.2. AI-Powered Educational Software and Apps

Today, learning a new language and developing new skills has become significantly easier with AI language learning apps. According to Makes You Fluent (2024), a language-learning app has built-in AI features that allow learners to customize their learning experience. Language learning apps come equipped with AI features that provide learners with real-time feedback on every aspect of the learning process, from speaking the language to grammar, guiding the learner through the learning process.

Language learning apps provide students with real-time experience where the learner can practice and develop new skills at a pace that is convenient for them. (**Table 1**)

Table 1. Four interacting components of the ITS model.

AI Language Learning App	Features	Cost
Duolingo	Features gamification, tracks progress, uses repetition.	Free version, $12.99 per month, and $59.99 per month.
Babbel	Podcasts, concise lessons, opportunities to practice everyday conversations.	Free trial, $9.99 per month for 3 months, $7.49 per month for 6 months, or $5.99 per month for 12 months.
Rosetta Stone	Live, manageable lessons. Features a phrasebook.	There is a free trial, and the monthly fees are 15.99 per month for three months, 13.99 per month for 12 months, and $399 for a lifetime subscription.
Memrise	Videos, interactive quizzes, and exercises, vocabulary.	Free.
Mango	Listening and reading activities, vocabulary, grammar, pronunciation, and culture.	Basic version free, single language with specific features $11.99, all languages $19.99 per month.
Google Translate	Connect with people, places, and cultures without language problems. Translates speech.	Free of charge. Google Services provides premium-level services.
Quizlet	Quizlet is a learning platform that assists people with practice and mastery of their learning through flashcards, practice questions, interactive diagrams, and activities.	Free option with limited features. A paid option called Quizlet Plus is available for $48 per year.
Lingvist	Unlimited cards, voice input, themes, and course focus. Includes Course Wizard where available. 50 plus languages. AI-powered language learning. Create own vocabulary deck. Courses are industry-specific.	A Free trial includes all features. $79.99 per year. $9.99 per month. Lingvist for Business.
Mondly	Learn English in your native language. A separate app for kids is included in the subscription. Each lesson lasts about 5 to 15 minutes. Uses gamification with apps.	Mondly has a free version and a paid subscription.
Elsa Speak	Voice-enabled role play. Realistic speaking practice. Create your scenario. Thousands of bite-sized lessons on various skills and topics.	Seven-day free trial. $11.83 pro per month. $141.99 pro annually. Premium is $16.67 per month. $199.99 annually.
Speechling	Speechling has unlimited personal one-on-one coaching on entire sentence collection. Audio journal saves progress and switches between languages. Offline resources.	Free version. Plans from $19.99 per month.
Italki	A marketplace for language teachers and tutoring.	Lessons range from $4 to $80 per lesson. Teachers set their rates.
Pronunciator	Tailored courses. Courses for auditory learners and visual learners.Kinesthetic learners, text-based learners, and visually impaired learners.	Not listed.

2.3. Intelligent Tutoring and Support

Intelligent tutoring systems (ITSs) are powerful AI tools used in today's classrooms to customize and provide students with personalized learning experiences (The Princeton Review, 2024). These intelligent tutoring systems provide students with customized lessons and guidance without an instructor. ITS's automated computer programs deliver personalized guidance beyond traditional computer instruction that caters to student's needs, creating one-on-one educational experiences (The Princeton Review, 2024). ITS research aims to provide advanced personalized guidance and advance the understanding of cognitive processes involved in teaching and learning.

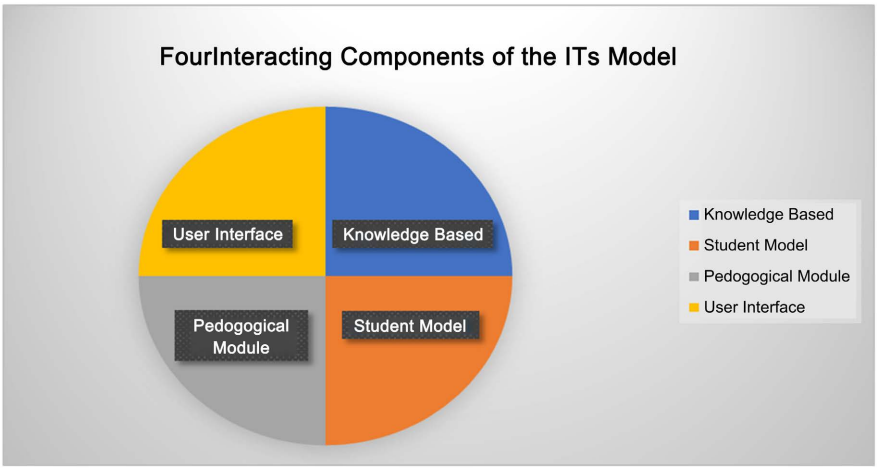

Figure 1. Four interacting components of the ITs model.

Recent teaching approaches have shifted from the traditional student model to theory-based approaches that involve AI. AI allows instructors to instruct computers, which in turn guides student learning. The ITS model allows computers to use generalized techniques to solve problems (The Princeton Review, 2024). ITS systems began in the 1960s and 70s. As shown in **Figure 1**, it was in 1988 that the ITS model was applied to the classroom, paving the way for more effective learning systems. In the 1980s, innovative learning techniques such as ITS transformed education into an adaptive, student-focused learning experience (The Princeton Review, 2024).

2.4. Automating Administrative Tasks

Intelligent tutoring systems have played a key role in education administration through AI-powered solutions that automate routine tasks, provide real-time analytics, and support data-driven decision-making (Thuy & Tien, 2024). ITS contributes to more efficient operations of educational systems. ITS can automate the workflow, initiate data-driven decision-making, create personalized learning experiences and optimization, and enhance AI student services (Thuy & Tien, 2024).

ITS and AI are providing personal support and inclusive learning opportunities for all students, building strong connections with instructors. In 2020, the World Economic Forum issued a report called "Shaping the Future of Learning: The Role of AI in Education" that shows four promises that result from the integration of tasks that are used to create a human-centric educational environment (World Economic Forum, 2024a). The report suggests that teachers' roles should be integrated with AI. AI-enabled assessments offer valuable insights that can pinpoint learning trends, and AI can support digital literacy by personalizing learning content and experiences (World Economic Forum, 2024a). (**Table 2**)

AI-driven innovations can prioritize equity and enhance instructor-inspired pedagogy (World Economic Forum, 2024a). Innovative learning should acknowledge the roles played by instructors, parents, and educational institutions in adopting

AI technology. Teaching about AI is as important as teaching about AI (World Economic Forum, 2024a). Addressing these components of AI will ensure that AI is available to unlock and improve educational outcomes for all learners worldwide.

Table 2. ITS and automated administrative tasks (Thuy & Tien, 2024).

Intelligent Tutoring Systems	Task
Automate Administrative Workflow	Streamline administrative tasks
Initiate Data-Driven Decision-Making	Use data analytics to provide actionable insights
Personalize Learning and Administrative Support	Create personalized learning experiences
Resource Optimization	Optimize management of resources
Enhance Student Services	Enhance comprehensive student support services

2.5. Innovations and Implications for Modern Education

Recent advances in artificial intelligence, like ChatGPT, have opened the door to providing every student with an equal opportunity to develop the needed skills to succeed. AI and technology offer quality learning opportunities and novel ways of teaching that evens out the playing field for all students. According to Dan Schwartz, Dean of Stanford Graduate School of Education, technology is changing education and adding new teaching methods to the mix (Spector, 2024). The Elementary and Secondary School Emergency Relief funding, which provided pandemic recovery funds, has come to an end, and schools must decide on the best type of technology for their schools (Spector, 2024).

In 2023, new technologies such as AI and ChatGPT entered the picture. These new AI tools have significantly improved educators' lives, giving them more time to do the work only instructors can do in their classrooms. Now, as instructors, we must educate students on how to use and understand AI technology properly.

Augmented, virtual, and mixed reality will be integrated into the classroom in 2024 (Spector, 2024). These new technologies will allow students to create scenarios using cell phones, cameras, and simple online tools. According to Kristen Pilner Blair, students can explore the world through virtual field trips to learn about climate change and how it impacts the environment. Not only can they experience the impact of climate change on their environment, but they can also document and share immersive media that shows how climate change affects the environment where they live.

2.6. Use of AI in Grading and Assessments

The use of AI has been used extensively in online educational courses. Today, AI has grown to include AI in educational assessment to improve the reliability and validity of educational evaluations (Gardner et al., 2021). Extensive data analysis has made automated scoring of academic assessments and computerized tests possible. If computers can be taught the same content that students are required

to know, then the computer can assess the students on the knowledge they have learned using those criteria (Gardner et al., 2021).

2.7. The Human Approach

The assessment of student learning is a crucial component of effective teaching. Effective evaluation strategies play a vital role in a student's academic success, enhancing each student's capabilities. Assessment is critical in helping educators measure a student's progress and identify areas needing attention. Practical evaluation of a student's learning allows instructors to tailor the instruction to meet the student's specific needs.

Assessments are an effective way to gain insight into a student's knowledge and skills, allowing instructors to adjust the learning material resulting in improved outcomes. Several types of assessments are used to measure a student's learning, including formative, summative, diagnostic, performance-based, and peer assessment (Strobel Education, 2023).

The purpose of a summative assessment is to evaluate a student's learning at the end of a semester or at the end of a specific period of time. Summative assessments usually have a high point value, which means that they are high stakes (Carnegie Mellon University, 2024; Strobel Education, 2023). Summative assessments include final exams, end-of-course exams, a paper or final project, and standardized tests.

Instructors can use a formative assessment to provide continuous feedback throughout a specific course or the school year. Formative assessments help teachers improve their teaching style and help students improve their learning (Carnegie Mellon University, 2024; Strobel Education, 2023). Formative assessments help to identify a student's strengths and target those weak areas that need additional work. A formative assessment has no point value. A good example is to have students submit a few sentences to identify the main point of a lecture or create a research proposal. (**Figure 2**)

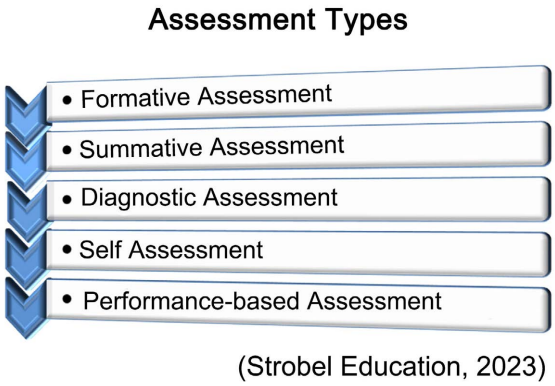

Figure 2. Types of formative assessments.

Diagnostic assessments are usually used at the start of the school year or the start of a semester to evaluate students' prior knowledge and skills regarding a

specific topic, allowing instructors to personalize the classroom content to meet the learners' needs. Performance-based assessments require students to demonstrate their prior knowledge and abilities. Students must be able to apply their knowledge to real-world situations. Performance-based assessments can be a project, a presentation, real-world scenarios, a portfolio, or a hands-on experiment (Strobel Education, 2023). The above-mentioned assessments display learners' knowledge of content and skills. Instructors should provide students with specific requirements and guidelines to complete the assessment, allowing them to revisit and improve their performance as needed.

Self-assessment requires students to self-reflect and take ownership of their learning (Herrity, 2023). A self-assessment is a great way to analyze work performance and provides a better understanding of how well one is performing in their present position. Knowing one's strengths and weaknesses can help in creating goals for the future (Herrity, 2023). Indeed suggests that a self-assessment should consist of the following steps:

> Reflect on personal accomplishments
> Be honest about the areas that need work
> Set challenging goals
> Provide specific metrics on how goals will be accomplished
> Be professional and positive
>
> (Herrity, 2023).

Self-assessment should include strengths, areas for improvement, personal goals, values, and achievements.

3. Challenges and Concerns

In 2021, an Educause poll of 195 higher education IT leaders revealed that higher education institutions were becoming more reliant on Artificial Intelligence. Sixty percent use AI to detect plagiarism, 42% use AI for proctoring, and 36% of higher education institutions use inquiry as an efficient way to answer student questions, requests for information, or departmental concerns (Paritii, 2023; Burns, 2024).

With the increased use of AI in higher education, many institutions are becoming more integrated. According to Educause, two-thirds of the institutions polled struggle with infrastructure limitations, 72% struggle with data privacy and security, 71% struggle with technology, 67% struggle with budget limitations, 68% struggle with moral and ethical concerns, and 67% struggle with biases and a lack of equal access to AI resources for minority students (Paritii, 2023; Burns, 2024).

3.1. Data Privacy and Security

Higher education institutions often rely on third-party services and products. With the integration of AI into these products, managing those risks is becoming more complex. To better control the risks that come with these products, educational institutions must become more adept at assessing the risks of third-party AI products

and services.

Most of these institutions (63%) noted that their organizations had no formal process to manage third-party risk management, while 35% indicated that they have a formal risk management process in place (Muscanell, 2024; Paritii, 2023). In most institutions, third-party risk management is shared across all departments, with the majority of the responsibility assumed by IT, compliance and legal, purchasing, data security and privacy, and risk management (Paritii, 2023).

3.2. Dependence on Technology

Higher education over the next few years will be impacted by the technological innovations of AI. The Economist Intelligence Unit (2008) notes that online learning tools will change the curriculum to be engaging, and instructors will soon incorporate more than one medium into the classroom. Many online courses are now filmed, and students are welcomed to class with a personalized welcome message explaining the course requirements and instructor expectations. Multi-modal teaching and enhanced video presentation tools are expected to impact the student's learning experience profoundly. Discussion forums, social networking in the classroom, gamification, and simulation software will likely be adopted by many universities worldwide.

Instructors will focus more on the application of knowledge rather than on memorizing material. In a technology-advanced classroom, the instructor's role evolves from an instructor to a coach or mentor. Over the next five years, the Economist Intelligence Unit suggests that there will be more interdisciplinary majors, and students can customize their degree programs either in their universities or by "bundling "classes from different universities (Economist Intelligence Unit, 2008).

3.3. The Digital Divide and Equal Access to AI Resources

Today, AI technologies are becoming more prevalent in classroom settings. As technology's role of technology expands, it is essential to consider how paid AI services will increase the disparity in digital access (Davidoff, 2024). Digital technology resources can be valuable educational tools; however, their costs could limit access to low-income students. AI companies could resolve this issue by offering financially disadvantaged students free access to digital tools, providing equal opportunity for all students, and improving academic outcomes.

3.4. The Use of Chatbots

According to Stohr et al. (2024), more than one-third of all students use ChatGPT compared to other chatbots in higher education. ChatGPT and other chatbots can serve as self-study tools where students can research information and find answers to problems instantly. These tools provide personalized support and can improve academic performance. ChatGPT is also helpful in developing educational materials and assessments for content creation and curriculum design.

Some issues currently being addressed in higher education include assessment and academic integrity. ChatGPT can be challenging because it can closely mimic students' work, making it difficult to distinguish ChatGPT from the students' work and raising questions about plagiarism. ChatGPT has even been known to create false information and hallucinate, leading to concerns about reliability. Educators and students must understand the capabilities and limitations of ChatGPT so misuse does not occur.

3.5. Enhancing Linguistic Proficiency with Artificial Intelligence

Technological advancements and current AI tools have impacted teaching and learning languages. AI platforms and tools provide many opportunities for practice and engagement (Ouyang & Jiao, 2021). Many research studies have investigated AI-assisted language learning tools and focused on achieving and acquiring specific language skills (Hsu et al., 2023).

Hsu et al. (2023) examined and learned that EFL learners who used AI for learning vocabulary demonstrated significant improvement. In addition, learners developed self-regulation and decreased language learning anxiety. Junaidi (2020) studies the role of AI-assisted language learning tools to help EFL learners build and improve their speaking skills. The study's results revealed that students who used AI outperformed other learners who opted not to use AI.

3.6. Pedagogical Strategies and Technological Integration in a World Language Class

Learners are already using AI tools to learn languages and other skills. In world language classrooms, students should use AP apps and platforms to enhance learning and provide learners with the best experience. Regardless of the format of the class, students will benefit from speech recognition and pronunciation tools, virtual reality, and augmented reality tools, which will make practice more relevant and applicable. In addition, AI-enhanced writing tools can help provide students with grammar, vocabulary, and punctuation instruction.

By implementing AI tools, instructors can create a dynamic and creative learning environment that focuses on each student's language needs. However, instructors must be sure of ethical considerations respecting student privacy and data security. One of the best teaching methods could be blended learning, which mixes AI tools with traditional teaching practices to provide learners with a comprehensive language learning experience.

4. Exploring Benefits and Overcoming Barriers

Artificial intelligence is quickly gaining in popularity across all businesses. AI can improve skills, increase productivity and efficiency, spark creativity and innovation, save time, speed up learning, enhance student engagement and motivation, and improve accessibility for students, to name a few.

AI language learning tools are programs or software applications that assist

students in improving their foreign language skills. These programs can save time and increase the learning rate by increasing the speed and providing a personalized learning experience, helping students learn about other cultures.

Future use of these tools could be instrumental in making changes like combining virtual and augmented reality and using algorithms for adaptive learning. AI can potentially improve the effectiveness and efficiency of foreign language learning. AI language learning software can assist students by personalizing the learning experience based on the student's needs. Many different AI learning tools exist, such as Duolingo, Elsa Speak, Google Translate, and more. Students can save time by customizing tasks specifically for their needs.

4.1. Benefits of Using AI-Language Learning Tools in Education

There are several benefits to using AI language learning tools in education including:

Increased efficiency and productivity—Language learning tools can improve effectiveness and efficiency by saving time and personalizing the learning experience for the individual learner (Xie et al. 2019). These tools can assist students in learning much faster by providing immediate feedback, resulting in timely improvement.

Innovation—Educators are finding new ways to incorporate innovative language learning tools into the curriculum to engage students and make learning a language more relevant. Instructors are incorporating multimedia resources into teaching, including videos, interactive online platforms, gamification, and podcasts, into lessons to expose students to more interactive and engaging opportunities. Project-based learning is where students are exposed to real-life situations where they are required to use the target language to solve problems (Skill Success, 2023).

Sparking creativity—Language learning tools play a key role in the cultivation of creativity in language learning. As a tool, AI shapes the development of creative thinking by creating a rich environment that promotes creative processes. The interactions that take place in AI language learning tools promote the use of digital storytelling that opens the door to stimulating creativity in developing language skills.

Enhanced student engagement and motivation—AI language learning tools can increase efficiency and engagement using algorithms to track student progress. This can result in a high level of engagement, allowing instructors to adapt the learning materials to meet the student's needs.

Improved accessibility for students with disabilities—AI language learning tools can be easily accessed online or as a mobile app. Learners can access these apps at a time that is convenient for them from any location worldwide.

4.2. Overcoming Barriers

Often, leaders lack an understanding of AI and digital transformation's capabilities. Understanding how AI, deep learning, language generation, and machine vision

can contribute to a student's success is important (Font de la Vall & Araya, 2023). AI language learning tools can be used to increase the level of engagement and create a rich environment that leads to success. Analyzing leaders' perceptions informs the development of AI language learning tools to align and customize the quality of learning (Ramachandran, 2024). Maintaining a high level of transparency is critical to success in solving everyday problems.

Data accessibility and quality are key factors to adoption. Data inaccuracy and inaccessibility can hurt the most advanced AI models. Strong data quality control measures that enhance data enrichment are important to provide the high-quality data initiatives needed to achieve student success. AI skills are in such high demand that universities should consider adding in-house training programs for faculty to cultivate the existing workforce.

One of the biggest ethical concerns associated with AI in education is privacy. Privacy violations occur when students expose large amounts of personal information on online platforms. While legislation exists to protect personal information, tech company violations related to data access and security have given rise to student privacy concerns (Regan & Jesse, 2019). Another concern with the use of AI is surveillance, also known as tracking systems. These surveillance systems are embedded into AI's predictive systems, revealing students' learning performance, strengths, weaknesses, and learning patterns (Regan & Jesse, 2019). Bias and discrimination are major concerns in AI ethics (Krutka et al., 2019). Gender bias occurs when students use AI to translate between gender-specific languages (Krutka et al., 2019). There are also cases of racial bias that take place with AI's facial recognition system. Research reveals that facial recognition software has identified African American and Latino Americans as convicted felons (Murphy, 2019).

The initial cost of adding an AI technology learning system can vary greatly depending on the type of system. The initial cost can range from $25 per month to tens of thousands of dollars (Wideman-van der Laan, 2024). The purchase and implementation of larger systems require a significant outlay of cash for the initial purchase, for the cost of maintenance, and updating these systems and training staff also adds significantly to the costs (Wideman-van der Laan, 2024). Adopting a phased approach, such as a smaller pilot project, allows a company to demonstrate AIs return on investment based on proven benefits (Marr, 2024; Wideman-van der Laan, 2024). According to Ramachandran (2024), it is possible to add small pilot projects to existing systems to permit the testing of AI capabilities with existing older systems. Additionally, middleware can be added to close the gap between older systems and new technologies without directly integrating the two (Ramachandran, 2024).

To implement an effective strategy when implementing an AI technology learning system, educational institutions must align their AI initiatives with the business's strategies. These strategies must include goals, performance metrics, and a framework for continuous evaluation and change (Marr, 2024). Scaling AI

initiatives from a pilot program across an entire educational setting can be challenging. Standardizing AI tools will allow customization to meet diverse departmental needs. A balanced approach will maximize AI technologies across the organization (Marr, 2024).

5. Future Trends and Current Applications of AI in Education

According to the World Economic Forum, there will be a need for 44 million teachers worldwide by 2030 (World Economic Forum, 2024b). As technology rapidly advances, educational institutions must harness AI technologies to transform and enhance learning outcomes.

Education 4.0 targets four key strategies to transform education including generating quality insights and tools, engaging educational leaders, mobilizing the education industry, and accelerating public-private partnerships (World Economic Forum, 2024b).

5.1. Predictions and Trends

Academic institutions must adapt to generative artificial intelligence (GenAI) and its impact on academics. Organizations must support their instructors and invest in reskilling their workforce to ensure they are meeting the needs of all students (World Economic Forum, 2024c). Technical skills are a must-have for all instructors; however, soft skills, such as problem-solving and communication skills, must not be dismissed (World Economic Forum, 2024c). Soft skills will ensure that students will thrive in a technology-based environment.

5.1.1. Is AI a Threat?

AI comes with many benefits; however, the key question is, can it be controlled? Scott Niekum, who heads SCALAR, the Safe, Confident, and Aligned Learning + Robotics lab at UMASS, explains that AI has progressed so quickly that threats are still possible and remain uncalculated (Abrams, 2023). Abrams also notes that minorities have already experienced a higher burden when it comes to harm caused by AI (Abrams, 2023). One example is facial recognition. Facial recognition systems work differently on Black people and have even led to false arrests (Abrams, 2023). It is expected that as AI systems increase in usage, these types and levels of risks will increase.

During the pandemic, a high-profile case of harm took place when a student was not able to take the placement exam due to the pandemic. The system showed bias against this student from a poorer background. Another case took place when AI wrongly predicted that a student would not perform well on year-end exams and may drop out next year, which can play a role in determining that student's reputation in front of teachers and parents (Abrams, 2023). This could psychologically impact the student in a negative way, resulting in a negative psychological impact on the student.

Ethical AI in education is necessary to ensure the well-being of students, faculty, and administrative personnel. The field of education has recently seen an influx

of data in the field of online learning. However, AI ethics in education is not seen as a priority for educational technology companies or schools (Chaudhry & Kazim, 2021). There is a growing concern about digital ethics, and the ethics focus on developing trustworthy artificial intelligence. There must be a focus on fairness, accountability, transparency, and explainability (Kazim & Koshiyama, 2020).

5.1.2. AI Risks and Bias

AI has found itself in classrooms around the world in the form of AI robots that use spell and grammar checks to correct written assignments, making them appear more professional; however, not all students have access to these digital tools, creating a digital divide. Research completed by the National Education Association (NEA) revealed that one-quarter of all school children come from households without broadband or computer access. This inequity has led to historical divisions of race, socioeconomic status, and geography (Greene-Santos, 2024).

According to Misty Freeman, AI has created a digital divide here in the United States that separates those with internet access and technology in rural areas and those without (Freeman, n.d.). As AI tools continue to grow in scope, they also take on the characteristics of human intelligence, including biases. According to a Stamford University Study, AI bias has hurt non-native English-speaking students, where their writings were falsely flagged as AI-generated, which could lead to false accusations of cheating (Liang et al., 2023).

As we move into the future, it will be essential to ensure that AI creators do not perpetuate AI bias. African American students already face unconscious bias without technology such as AI, so educators and AI developers need to understand how students of color could be affected by AI bias (Liang et al., 2023).

5.2. Role of Teachers in an AI-Driven Education System

AI will transform the educational system and the role of facilitators by handling routine tasks so that instructors will be able to guide students in solving complex problems by encouraging critical thinking and sparking creativity. Facilitators will take on the role of personal mentors, providing each student with personalized support as they overcome challenges and achieve their fullest potential. Instructors will be able to provide students with emotional intelligence and the knowledge and soft skills needed to advance their future careers.

5.3. How to Make an AI-Driven Education System Work

An AI-driven education system of the future holds much promise and opportunity for students and educators. With more trends and developments, we can expect to see a system that will work with other technologies, such as cloud computing, big data, and augmented reality (Sharma, 2023). AI will become more collaborative and increase communication between students, parents, educators, and the community.

Education will become innovative and experimental, encouraging creativity and exploration when it comes to learning. Experimentation and testing new ideas

will lead to additional feedback, improved results, and outcomes (Sharma, 2023). AI will promote diversity, equity, and inclusion in education as it provides equal access and opportunity for students and educators who face their own barriers and challenges (Sharma, 2023). While these challenges and barriers may be significant, they are not unsolvable. Understanding these AI problems and solutions will highlight the value of AI.

6. Conclusion

The impact of AI has revolutionized the educational field, providing many advantages for learners. AI offers limitless capacity by personalizing instruction and feedback, making learning a foreign language accessible, flexible, and engaging. Many AI tools allow students to build their proficiency and fluency through gamification focusing on different linguistics skills, Intelligent Tutoring Systems, and speech recognition. The AI also provides resources for instructors to evaluate and conduct data analysis, resulting in accurate feedback and improved learning outcomes. Maximizing innovative technologies will foster learners' autonomy and provide an equitable, effective, personalized educational experience.

Although there are many advantages, there are also some limitations, like data privacy, lack of human interaction, outdated systems, and lack of faculty preparedness for addressing rising challenges, ensuring integrity, and ethically considering third-party risks. The success of the implementation and development of AI must be inclusive, ethical, and geared towards creating equal opportunities for all students.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

Abrams, B. (2023). *Experts Issue a Dire Warning about AI and Encourage Limits Be Imposed.* https://www.npr.org/2023/05/31/1179030677/experts-issue-a-dire-warning-about-ai-and-encourage-limits-be-imposed

Bisson, M. J., Goldberg, A. M., & Zhang, S. (2019). Artificial Intelligence Applications in Computer-Assisted Language Learning: A Research Synthesis. *Language Learning & Technology, 23,* 20-42.

Burns, S. (2024). *Educause QuickPoll Results: AI in Communications Applications.* https://er.educause.edu/articles/2024/11/educause-quickpoll-results-ai-in-communications-applications

Carnegie Mellon University (2024). *What Is the Difference between Formative and Summative Assessment?* https://www.cmu.edu/teaching/assessment/basics/formative-summative.html

Chaudhry, M., & Kazim, E. (2021). Artificial Intelligence in Education (AIED): A High-Level Academic and Industry Note 2021. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.3833583

Davidoff (2024). *How Broadening AI Access Can Help Bridge the Digital Divide.*

https://www.benton.org/headlines/how-broadening-ai-access-can-help-bridge-digital-divide

Economist Intelligence Unit (2008). *The Future of Higher Education: How Technology Will Shape Learning.* https://files.eric.ed.gov/fulltext/ED505103.pdf

Font de la Vall, R., & González Araya, F. (2023). Exploring the Benefits and Challenges of Ai-Language Learning Tools. *International Journal of Social Sciences and Humanities Invention, 10,* 7569-7576. https://doi.org/10.18535/ijsshi/v10i01.02

Freeman, M. (n.d.). *AI Futurist Thought Leader.* https://www.drmistydfreeman.com/

Gardner, J., O'Leary, M., & Yuan, Li. (2021). Artificial Intelligence in Educational Assessment: 'Breakthrough? Or Buncombe and Ballyhoo?' *Journal of Computer Assisted Learning, 37,* 1207-1216. https://onlinelibrary.wiley.com/doi/full/10.1111/jcal.12577

Greene-Santos, A. (2024). *Does AI Have a Bias Problem?* https://www.nea.org/nea-today/all-news-articles/does-ai-have-bias-problem

Herrity, J. (2023). *How to Perform a Self Assessment.* https://www.indeed.com/career-advice/career-development/self-assessments

Hsu, T., Chang, C., & Jen, T. (2023). Artificial Intelligence Image Recognition Using Self-Regulation Learning Strategies: Effects on Vocabulary Acquisition, Learning Anxiety, and Learning Behaviours of English Language Learners. *Interactive Learning Environments, 32,* 3060-3078. https://doi.org/10.1080/10494820.2023.2165508

Junaidi, J. (2020). Artificial Intelligence in EFL Context: Rising Students' Speaking Performance with Lyra Virtual Assistance. *International Journal of Advanced Science and Technology, 29,* 6735-6741.

Just Think AI (2024). *The Role of AI in Personalization.* https://www.justthink.ai/blog/the-role-of-ai-in-personalized-learning#:~:text=AI%20techniques%20like%20machine%20learning%20and%20natural%20language,based%20on%20individual%20progress%20and%20interactions.%20More%20items

Kazim, E., & Koshiyama, A. (2020). A High-Level Overview of AI Ethics. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.3609292

Krutka, D. G., Manca, S., Galvin, S. M., Greenhow, C., Koehler, M. J., & Askari, E. (2019). Teaching "Against" Social Media: Confronting Problems of Profit in the Curriculum. *Teachers College Record: The Voice of Scholarship in Education, 121,* 1-42. https://doi.org/10.1177/016146811912101410

Kumar Betal, A. (2023). Enhancing Second Language Acquisition through Artificial Intelligence (AI): Current Insights and Future Directions. *Journal for Research Scholars and Professionals of English Language Teaching, 7,* 1-8. https://doi.org/10.54850/jrspelt.7.39.003

Liang, W. X. et al. (2023). GPT Detectors Are Biased against Non-Native English Writers. *Patterns, 4,* Article ID: 100779. https://www.cell.com/patterns/fulltext/S2666-3899(23)00130-7?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2666389923001307%3Fshowall%3Dtrue

Liu, Y., Chen, C. M., & Chang, C. Y. (2021). Investigating the Effects of an Intelligent Tutor with Adaptive Instructional Support in Mobile-Assisted Language Learning. *Interactive Learning Environments, 29,* 31-48.

Makes You Fluent (2024). *20 Best Language Learning Apps in 2024.* https://makesyoufluent.com/ai-language-learning-apps/

Marr, B. (2024). *11 Barriers to Effective AI Adoption and How to Overcome Them.*

https://www.forbes.com/sites/bernardmarr/2024/05/10/11-barriers-to-effective-ai-adoption-and-how-to-overcome-them/

Murphy, R. F. (2019). *Artificial Intelligence Applications to Support k-12 Teachers and Teaching: A Review of Promising Applications, Challenges, and Risks.* Rand. https://doi.org/10.7249/PE315

Muscanell, N. (2024). *Educause Quick Poll Results: Third-Party Risk Management Practices in Higher Education.* Educause Review.

Ouyang, F., & Jiao, P. (2021). Artificial Intelligence in Education: The Three Paradigms. *Computers and Education: Artificial Intelligence, 2,* Article ID: 100020. https://doi.org/10.1016/j.caeai.2021.100020

Paritii (2023). *Challenges and Risks of Implementing AI in Higher Education.* https://assets-global.website-files.com/614c74bed493c614df61ef20/657ce1d1af3278fa71f17084_Challenges%20and%20Risks%20of%20Implementing%20AI%20in%20Higher%20Education.pdf

Promethean (2023). *Trailblazing Technology: The Rise of AI in Education.* https://www.prometheanworld.com/resource-center/blogs/trailblazing-technol-ogy-the-rise-of-ai-in-education/

Ramachandran (2024). *Enterprise AI Integration: Fine-Tuning Large Language.* https://www.linkedin.com/pulse/integrating-ai-legacy-systems-challenges-strategies-josh-denton-pksqe

Regan, P. M., & Jesse, J. (2019). Ethical Challenges of Edtech, Big Data and Personalized Learning: Twenty-First Century Student Sorting and Tracking. *Ethics and Information Technology, 21,* 167-179. https://doi.org/10.1007/s10676-018-9492-2

Sharma, N. (2023). *How to Overcome Educational Challenges with AI-Driven EdTech Solutions?* https://www.hurix.com/overcoming-educational-challenges-with-ai-driven-edtech-solutions/

Skill Success (2023). *Exploring Innovative Approaches to Language Teaching.* https://blog.skillsuccess.com/exploring-innovative-approaches-to-language-teaching/

Spector, C. (2024). *How Technology Is Reinventing Education.* https://ed.stanford.edu/news/how-technology-reinventing-education

Stohr, C., Ou, A. W., & Malmström, H. (2024). Perceptions and Usage of AI Chatbots among Students in Higher Education across Genders, Academic Levels and Fields of Study. *Computers and Education: Artificial Intelligence, 7,* Article ID: 100259. https://doi.org/10.1016/j.caeai.2024.100259

Strobel Education (2023). *Assessing Student Learning: 6 Types of Assessment and How to Use Them.* https://strobeleducation.com/blog/assessing-student-learning-6-types-of-assessment-and-how-to-use-them/

Subramanian, A., Rajendran,VI, Anand, A., & Sharma, P. (2020). Adaptive Personalized Learning Using Machine Learning for Language Learners. In *2020 IEEE Tenth International Conference on Technology for Education (T4E)* (pp. 164-169). IEEE.

The Princeton Review (2024). *Intelligent Tutoring Systems: Enhancing Learning through AI.* https://www.princetonreview.com/ai-education/intelligent-tutoring-systems

Thuy, P. B., & Tien, P. D. (2024). AI-Powered Administration: The Role of Intelligent Tutoring Systems in Education. *International Journal of Religion, 5,* 4560-4569. https://doi.org/10.61707/sqwrjn32

University of San Diego (2024). *39 Examples of Artificial Intelligence in Education.* https://onlinedegrees.sandiego.edu/artificial-intelligence-education/

Wideman-van der Laan, Y. (2024). *AI in K-12 Education: Pros, Cons, and Costs a Guide for School District Leaders.* https://ed-spaces.com/stories/ai-in-k-12-education-pros-cons-and-costs-a-guide-for-school-district-leaders/

World Economic Forum (2024a). *The Future of Learning: How AI Is Revolutionizing Education 4.0.* https://www.weforum.org/stories/2024/04/future-learning-ai-revolutionizing-education-4-0/

World Economic Forum (2024b). *Education 4.0 Ensuring Emerging Technologies Improve Education Quality.* https://initiatives.weforum.org/reskilling-revolution/education-4-0

World Economic Forum (2024c). *This Is How Businesses Should Approach Reskilling for AI.* https://www.weforum.org/stories/2024/10/reskilling-ai-workers-businesses/

Xie, H., Chu, H., Hwang, G., & Wang, C. (2019). Trends and Development in Technology-Enhanced Adaptive/personalized Learning: A Systematic Review of Journal Publications from 2007 to 2017. *Computers & Education, 140,* Article ID: 103599. https://doi.org/10.1016/j.compedu.2019.103599