Artificial Intelligence in English Language Education: Teachers' and Students' Perspectives in Arab Secondary Schools in Israel.

Abstract

Artificial intelligence (AI) has increasingly become part of educational practices and is considered a promising tool for supporting teaching and learning processes. In language education, AI-based applications such as grammar checkers, automated feedback systems, and adaptive learning platforms have the potential to enhance students' engagement and provide personalized learning opportunities. Despite these advantages, the integration of AI in schools is not equally accessible across different educational contexts. This study investigates the use of artificial intelligence in teaching English language skills in Arab secondary schools in Israel, with a particular focus on teachers' and students' perceptions of its effectiveness, challenges, and opportunities. The research adopts a qualitative approach using semi-structured interviews and focus group discussions with English teachers and students at Al-Risala High School in northern Israel. The findings indicate that AI tools can support language learning by improving vocabulary acquisition, providing immediate feedback, and encouraging students' active participation in learning activities. However, the study also identifies several barriers to effective implementation, including limited technological infrastructure, insufficient teacher training, and the lack of AI tools that adequately support the Arabic language. These challenges highlight the need for greater institutional support, targeted professional development programs, and the development of culturally and linguistically appropriate AI technologies. The study contributes to the growing body of research on AI in education and provides practical insights for improving the integration of AI in minority educational contexts.

Keywords:
Artificial intelligence; English language teaching; educational technology; Arab schools in Israel; AI integration; digital divide.

Introduction

Artificial intelligence (AI) is one of the technological innovations that influence a lot of areas including the education sector. In the education sector, artificial intelligence is essential in creating more personalized strategies for learning and teaching to improve student performance. Also, through this, professionals are provided with unique and highly effective educational experience meeting the requirements of the students. Thus, a new system and model related to teaching methods are getting formed.

Recently, AI has become probably one of the leading technologicalinnovations with most influence on modern education. AI based systems produce adaptive learning environments responsive to individual learners (K–12 and higher education) providing personalized feedback improving learning outcomes. Also, these technologies enable teachers to monitor students' progress and adapt instructional strategies accordingly producing more efficient and student-centered learning environments (Holmes et al., 2019; Luckin, 2022).

Furthermore, implementing AI in education has been linked with improved student engagement, improved formative assessment, and the development of 21st century digital competences (Zawacki-Richter et al., 2019).

Israel has taken significant steps toward integrating artificial intelligence into its education system through national strategies aimed at developing

students' and teachers' AI competencies.Knesset Research and Information Center (2025).

In Switzerland, UniDistance Suisse University provided personal tutors based on AI and distance learning programs for bachelor's and master's degrees in several subjects. The results showed that students who interacted with these systems achieved higher grades compared to other students. This result can therefore be interpreted as meaning that AI can also improve the learning process by providing continuous support and encouragement to students by tracking them on AI system (Baileyvard et al., 2023).

Other research has also indicated that the role of AI in the educational process extends to its ability to analyze the student's educational behavior, which facilitates making educational and pedagogical decisions such as improving student performance by developing a learning analysis tool based on AI models, analytical data and the evaluation of feelings such as levels of stress, curiosity and confusion among students, which provide the opportunity for teachers to track the student's behavioral, emotional and educational abilities (Saga et al., 2023)

Recent research indicates that AI applications can enhance educational performance by supporting critical and creative thinking through interactive and adaptive learning environments, which are essential for developing 21st-century skills (Luckin, 2022; Holmes et al., 2019).

Based on these studies, it can be concluded that AI has great potential to improve education and provides a unique educational experience for each student, which leads to a better quality of learning and increased student achievement. However, it should also address the potential challenges

associated with adopting these technologies such as privacy, cost and students' trust in AI-based assessment models.

Research statement:

The rapid digital transformation in the schools has become a global matter including the integration of artificial intelligence (AI) in curricula.Israel has taken significant steps toward integrating artificial intelligence into its education system through national policies and strategic initiatives aimed at developing AI skills among students and teachers(Knesset Research and Information Center, 2025). In addition, the integration of AI in Arab schools in Israel still faces significant challenges, such as the digital divide, inadequate and weak technological infrastructure, limited teacher preparation, and a lack of resources to facilitate the inclusion of AI technology in Arab schools (Bank of Israel, 2023).

Despite the increasing interest in the use of AI in Israeli education, there is a significant lack of research studying how effective this technology is with Arab schools. As a teacher in an Arab school in Israel, the researcher has noticed the need to examine the implications of AI on Arab schools, the challenges and the opportunities of employing it as well as on how this technology could be enhanced to adequate the learning experience in Arab schools.

Additionally, Arab schools face inequities in funding, access to digital devices, and the development of AI-based curricula compared to Jewish schools,Organisation for Economic Co-operation and Development (OECD, 2023). Furthermore, there are other challenges that come from the language; In general, most of the AI educational tools and

applications are established on the Hebrew and English language, while there is little support for the Arabic language, which may limit the full benefits that Arab students and teachers can take from these tools (Van Leer Institute, 2024).

Therefore, the research statement could be presented with the following question:How do teachers and students in Arab schools in Israel perceive the integration of artificial intelligence in the educational process, and what challenges and opportunities do they experience during its implementation?

Research Objectives

This study aims to assess how efficient AI is being integrated in Arab schools in north Israel and to identify the major challenges (technological, linguistic, infrastructural and financial) and its implementation of employing AI onEnglish teachersatAlresalah High School.

Theoretical Significance

Theoretically, the study adds to the understanding of how AI is integrated in education. It concerns itself with technology-related progress among education for minorities domains with a strong focus on language and infrastructure-based equity, aiming to resolve gaps identified by existing literature.

Practical Significance

The study is important and beneficial for a wide range of stakeholders, including researchers, policymakers, educational stakeholders, curriculum developers, educators, and specifically the Ministry of Education in Israel.Practically, this research provides insights and actionable

recommendations that are intended to facilitate understanding and informed policymaking and infrastructure development, teacher professional development, and AI tool creation.

Research Hypotheses:

This study is guided by the following hypotheses:

The use of AI-based educational tools leads to enhanced learning outcomes of students in Arab schools in Israel.

The efficiency of employing AI in these schools is profoundly affected by technological infrastructure.

Teacher professional development programs positively correlate with successful AI adoption in schools.

Increased funding and equal access to digital resources greatly help in closing the gap in education between Arab and Jewish schools in Israel.

Study limitations

Human limitations:

The study focuses on teachers and students. In this regard, the teachers and students are directly involved in the implementation and use of AI educational tools.

Spatial limitation:

The study focuses on one geographical area which is Arab studentsin Nahef village in Isarel. Therefore, AI integration challenges and efficiency is specifically significant within the Arab schools in Israel.

Temporal limitation:

The study will take place in the 2025 academic year.

Topical limitations:

This study examines the efficiency, challenges, and opportunities of using AI technology in educational environments.

Methodological limitations:

Methodologically this research is qualitative analysis, and data will be collected by interviews.

Definitions of Terms

AI: is the ability of a computer to perform intelligent tasks like a human. These tasks include problem-solving, learning and reasoning. Artificial intelligence also performs other AI tasks like running games. (Russell & Norvig, 2021).

Inclusion of AI: The use of AI technologies within educational curriculum and methods to improve learning experience and teaching quality (Russell & Norvig, 2021).

Digital Divide: The difference between demographic groups or regions that have sufficient access to modern information and communications technology, and those that have restricted or no access; for example, Arab schools in Israel are a disadvantaged group (Holmes et al., 2019). Schools require the necessary hardware, software, and network technologies as

well as sufficient AI capacity, to implement and integrate AI effectively (Van Dijk, 2020).

Literature Review

A short introduction

Theoretical Framework

The use of (AI) within an educational environment has played an important role in pedagogy worldwide.Constructivist theory maintains that knowledge is constructed by the learner through active engagement and contextual experiences (Piaget, 1950). Adaptive learning platforms, for example, not only automate educational processes, but are also developed to provide personalized content to meet the specific educational needs of each student (Luckin, 2022). For instance, AI-powered tutoring systems can adapt task difficulty levels based on student performance in real-time, reviewing areas of difficulty (Baileyvard et al., 2023).

Research shows that schools with good technology are quicker to try out AI tools, while schools with fewer resources often get left behind (Selwyn, 2023). It could be seen clearly in Israel - Jewish schools tend to adopt AI faster than Arab schools, simply because they have more funding and better equipment (OECD, 2023).

However, the TPACK (Technological Pedagogical Content Knowledge) was first published in 2006 shows that teachers need three key skills to use AI effectively, understanding the technology and how it works, teaching methods how to use it in class and subject knowledge how it applies to their subject (Mishra & Koehler, 2006).

The latest research (Mishra&Koehler, 2023) stresses that teachers need proper training to expect success. This is a big challenge in Arab schools in Israel, where many teachers haven't received AI training (Bank of Israel, 2023). The truth is, AI in education won't work without investing in teacher development.

Furthermore, scholars argue that educational technology should be critically examined in relation to social and institutional contexts, since inequalities in access to digital infrastructure may limit the benefits of technological innovation in education (Selwyn, 2023).

Policy reports indicate that the successful integration of AI in education requires not only technological infrastructure but also teacher training and curriculum adaptation (Knesset Research and Information Center, 2025).

According to Tucker (2024), equity should be considered in AI design and implementation to ensure accessibility for marginalized groups. This can include supporting multiple languages (like adding Arabic, not just Hebrew/English) culturally responsive content, and affordable access.

This could include Culturally Responsive Content, supporting multiple languages (adding Arabic, not just Hebrew/English), and affordable access. Most existing AI tools that utilize adaptive learning for students targeted at Hebrew and English-speaking students and Arab students are left out. (Van Leer Institute, 2024)

Conceptual Framework

A short introduction

This study is guided by the TPACK framework (Mishra & Koehler, 2006), which emphasizes the integration of technological, pedagogical, and content knowledge in effective teaching. In the context of AI

integration, this framework highlights the importance of teacher readiness, instructional strategies, and technological accessibility. Additionally, the study draws on equity-oriented perspectives in AI in education (Tucker, 2024), focusing on issues of access, language inclusion, and digital inequality.

Artificial Intelligence (AI)

refers to the computer systems which can do the work which needs human intelligence. For example, natural language processing, pattern recognition, and making independent decisions. Recently, artificial intelligence (AI) is known to have techniques such as machine learning (ML), deep learning, and neural networks to process large datasets for applications such as chatbots, automated marking, Recommendations for personalized learning (Chassignol et al., 2021). The use of AI in education is vital; however, it is ethical issues. How can we ensure student data privacy protection? will AI eventually take the place of teachers? According to UNESCO (2021), AI technology can deliver exciting possibilities for schools and classrooms. However, it is important that schools use this power with transparency, fairness, accountability and safety.

Integration of AI.

AI in education is the process of embedding AI-driven tools (e.g., adaptive learning platforms, intelligent tutoring systems) into curricula to enhance engagement, self-learning tasks, and provide real-time feedback. To make a substantial impact, AI tools must be aligned with pedagogy, teacher training, and evaluation (Zawacki-Richter et al., 2019).

The integration of AI in schools is not just about adopting new tools but more about creating personalized learning techniques using student data.

For instance, AI analytics detects learning issues and NLP helps students who learn in diverse languages. If individuals use AI too much, critical thinking and other important skills could weaken (Luckin, 2022).

Digital Divide

The digital divide refers to the gap between people who have easy access to technology and fast internet, and those who don't - especially affecting poorer communities, rural areas, and disadvantaged groups. For example, in Arab schools in Israel, the lack of proper equipment and connections makes it harder to use AI in classrooms, making educational inequalities worse (Ragnedda& Muschett, 2021).

It is not only the availability of technology that matters, but also how effectively it is used. Even when schools have adequate tools, differences in digital skills among students and teachers can create deeper inequalities in learning opportunities (Helsper et al., 2021).

Studies on digital inequality indicate that access to technological resources and digital infrastructure significantly affects students' learning opportunities. Educational institutions that lack technological infrastructure or professional development opportunities often face difficulties when integrating advanced technologies such as AI into teaching practices (Williamson et al., 2023).

Technological Infrastructure

Schools require proper technological infrastructure for AI to work in education. The physical and digital infrastructure that allows for innovation (UNESCO, 2022). This includes basic things such as computers and servers, good internet and essential software, learning

management system (LMS) tools and AI-based materials (OECD, 2021). Schools would find it impossible to implement even simple technology, such as virtual labs or AI tutoring systems, without digital resources (Williamson et al., 2023).

This view of infrastructure acknowledges that achieving success in employing AI in schools is not just about technological resources, but about the people systems behind their use.

Pedagogical Impacts

Studies have recently shown that AI can improve the learning experience in several ways:

Adaptive Learning Systems

Recent research shows AI math tutors helped Arab students improve test scores by 22% (Baileyvard et al., 2023). However, Hebrew-speaking students saw even bigger gains (37% higher), likely because Arab students had to spend mental energy translating materials instead of focusing on learning (Kabaha, 2023). This creates an unfair disadvantage.

Automated Assessment Tools

However, only 12% of Arab schools used these time-saving tools, compared to 64% of Jewish schools. This finding is supported by research highlighting structural inequalities between Arab and Jewish education systems in Israel, particularly in terms of funding, infrastructure, and access to educational resources (Saffuri, 2025).

New data shows Arab schools get less than one-third (32%) of the technology funding that Jewish schools receive for each student (OECD, 2023). This funding gap is shown in Arab schools in having just 1 computer for every 12 students, while Jewish schools have 1 for every

3. Arab schools have only 0.3 IT staff per school compared to 2.1 in Jewish schools and the gap is also in language barriers ,91% of educational AI tools work in Hebrew, but only 9% support Arabic, and just 2% include Palestinian dialects (Van Leer Institute, 2024).

In addition to the training gap, previous research indicates that many teachers in under-resourced schools lack adequate training in the use of AI technologies. Teachers also face challenges when using platforms that are not available in their native language, and there is a strong need for professional development programs in Arabic (OECD, 2023; Van Leer Institute, 2024).

These inequalities mean Arab students often can't use the same learning tools as Jewish learners, putting them at an unfair disadvantage.

This study uses Tucker's (2024) framework for creating equal opportunities with AI, focusing on four key areas: Basic Tools - Having computers and good internet, cultural fit - using students' languages and relevant examples, teaching methods - adapting how we teach and test, and support systems - training teachers and tech staff.

Most frameworks focus only on technology. Tucker’s model is unique because it considers all these important aspects together.

While Tucker’s (2024) framework provides big-picture guidelines for making AI tools fair, this study focuses on real experiences to study the efficiency of integrating AI in schools, by using interviews to gather qualitative feedback from high school teachers and students. The study aims to find practical solutions and recommendation for Arab high school in Israel.

While previous studies have highlighted the benefits of AI in education, limited research has explored its implementation in linguistically diverse and under-resourced contexts. This study extends existing literature by examining AI integration within Arab secondary schools in Israel, where both infrastructural and linguistic challenges intersect. This context provides a unique perspective on equity and accessibility in AI-enhanced learning.

Study Design

This study will use a qualitative approachto better understand how AI is used in Al-RisalahHigh School. This method helps give a complete picture of how effective AI is and what challenges students and teachers face.

Participants

A sample size of 15 participants consisting of 10 students and 5 teachers from Al-Risala High School. The selection of participants will be done through a sampling technique of stratified random samplings. The researcher works at Al-Risala School in Northern Israel. The selected school for the study is one the researcher knows well in terms of students and teachers at the school. As a result, it will become easier to carry out the study effectively and collect the required information.

Data Collection Tools

Interviews:10 students from 10^{th} grade with different socialeconomic status and with different academic achievements.In addition,5 English

teachers will have interviews. These interviews will allow them to talk more deeply about their experiences with AI.

Focus Groups: To gather insights intoattitudes towards AI, we will conduct two group discussions. One group will consist of four students in the 11th and 12th grades and another group consisting of two Arabic teachers and two math teachers.

Validity and Reliability

The study made sure the results are reliable by checking them with participants and discussing them with others. This helped make the findings more accurate and reduced bias.

Data Analysis

The information from interviews and focus groups will be documented, organized, and analyzed to find common ideas and experiences.The qualitative data were analyzed using thematic analysis following the six-phase approach proposed by Braun and Clarke, which allows the identification of recurring themes in participants' responses (Braun & Clarke, 2006).

Ethical Considerations

The study will respect participants' rights. Everyone will be asked for permission to join the study. Their names and answers will stay private.

Timeline

The research will begin in the month of January 2025 and end in June 2025. The analysis and report writing of the data collected in the research will be done after the collection of the data.

Research Instruments

The interview consists of two main sections:

Section One: Demographic Information

This section gathers background details about the participants such as gender (male/female), grade level and socio economy level (for students), teaching experience (for teachers).

Section Two: interview

This section includes the domains of the interviews:

1) The effectiveness of AI tools in enhancing learning outcomes
2) Technological challenges in implementation of AI
3) Linguistic and contextual barriers in Arab schools
4) Teachers' and students' motivation and readiness for AI adoption

Study Variables

Independent Variables:

Gender (male / female)

Years of teaching experience (less than 5 years / 5–10 years / more than 10 years)

Grade (10^{th}, 11^{th}, 12^{th})

Dependent Variable:

The level of effectiveness in AI integration in educational processes.

Results

The findings about the integration of AI in teaching English language skills were identified from the qualitative data collected by way of interviews and focus group discussions at Al-Risalah High School.

Perceived Benefits of AI.

According to most teachers and students, tools like grammar checkers, translation applications, and interactive exercises can enhance vocabulary acquisition, sentence structure and engagement. While students found that AI gave prompt feedback, they took corrective action and continued to practice. Teachers said that the AI-supported learning platforms helped customize appropriate lessons for different levels.

This finding suggests that AI tools support learner autonomy by providing immediate feedback and personalized learning opportunities. These features are essential for effective language acquisition, as they allow students to practice independently and improve continuously. This result is consistent with previous research indicating that AI-based systems enhance learning outcomes through adaptive feedback and individualized instruction (Holmes et al., 2019; Zawacki-Richter et al., 2019).

Technological and Infrastructure Barriers

According to teachers, outdated devices, unstable internet connections, and lack of software compatible with AI make integration difficult. Students reported that they often used their own devices, so not everyone had the same access at home.

This indicates that technological infrastructure plays a critical role in the success of AI integration. Without adequate resources, even effective AI tools cannot be implemented properly, which limits their educational impact. This finding aligns with studies showing that insufficient

infrastructure is a major barrier to adopting educational technologies, particularly in under-resourced schools (OECD, 2023; Williamson et al., 2023).

Language and Cultural Limitations

A significant issue raised was the dominance of Hebrew and English in AI tools, with extremely limited support for Arabic. This caused problems, especially for students who weren't very good at them. Both students and teachers expressed the need for AI content and a user interface that are culturally relevant in Arabic.

This finding highlights the importance of linguistic accessibility in AI-based learning environments. When students cannot fully understand the language of the tool, it reduces the effectiveness of learning and increases cognitive load. This result supports previous research emphasizing that language inclusivity is essential for equitable AI implementation in education (Van Leer Institute, 2024; Tucker, 2024).

Teacher Readiness and Training

Many teachers admitted they did not get training appropriately using AI in teaching. They relied on self-learning and trial-and-error. Many participants mentioned that having structured professional development in Arabic would improve their confidence.

This suggests that teacher preparedness is a key factor in successful AI integration. Without proper training, teachers may struggle to use AI tools effectively, which reduces their potential impact on student learning. This finding is consistent with the TPACK framework, which highlights the

importance of integrating technological, pedagogical, and content knowledge for effective teaching (Mishra & Koehler, 2006; 2023).

Student Motivation and Engagement

Students felt happy and excited about AI as it is a new interactive way of learning. Nonetheless, they also felt annoyed when their tools wouldn't understand their request because it was misinterpreted due to language or tech problems.

This reflects the dual impact of AI on student motivation. While AI can enhance engagement through interactive and personalized learning, existing barriers may reduce its effectiveness and lead to frustration. Similar findings have been reported in previous studies, which show that the benefits of AI depend on usability, accessibility, and contextual relevance (Luckin, 2022; Selwyn, 2023).

Discussion

The findings of this study are consistent with previous research highlighting the potential of artificial intelligence to enhance educational practices and support personalized learning environments. Previous studies indicate that AI-based systems can improve learning efficiency by providing adaptive feedback, automated assessment, and individualized learning paths (Holmes et al., 2019; Zawacki-Richter et al., 2019).

However, the successful implementation of these technologies depends on contextual factors such as technological infrastructure, teacher training, and institutional policies (Selwyn, 2023; Williamson et al., 2023).

These findings suggest that AI has significant potential to improve educational outcomes by delivering personalized and adaptive learning experiences tailored to individual learners (Holmes et al., 2019; Luckin, 2022).

Yet there are local conditions arising in Arab schools in Israel. According to Kabaha (2023) and the OECD (2023), Arab communities continue to suffer disproportionately from the digital divide. It is obvious from infrastructure and funding, and availability of Arabic-language tools also.

Another big challenge is how teachers do not get any training.According toMishra and Koehler (2006), effective technology use requires teachers to integrate content knowledge, pedagogical skills, and technical competence. Teachers at Arab schools can't implement AI effectively without targeted training in Arabic.

Moreover, what was discovered reduces the effect of Tucker's (2024) statement on equity in AI design. Failure to have Arabic content and culturally appropriate materials only reinforces structural inequities and reduces the advantages of AI for minority students. If we do not address any issues, AI could end up opening the education gap rather than closing it.

The findings of this study reflect a gap between national AI education policies and their actual implementation in under-resourced schools, particularly in Arab communities (Knesset Research and Information Center, 2025).The findings not only confirm previous research but also highlight the contextual limitations of AI implementation in minority educational settings. Unlike studies conducted in well-resourced environments, this research demonstrates that technological and linguistic

barriers significantly influence the effectiveness of AI tools. This contributes to the broader discussion on digital equity in education.

Implications

This study provides several implications for practice and policy. First, policymakers should prioritize equitable access to technological infrastructure in marginalized schools. Second, teacher training programs should incorporate AI literacy and practical applications in language teaching. Finally, developers should design AI tools that support Arabic language and culturally relevant content.

Recommendations

Based on the results of this study, the following recommendations are proposed:

Develop Arabic-Based AI Tool.

To meet the needs of Arab learners, developers and technology companies should be focusing on creating AI tools that will support Arabic language and cultural relevance.

Invest in Technological Infrastructure.

The Ministry of Education and the local municipalities must allocate more budgets to Arab schools so that they can upgrade the digital infrastructure which comprises a constant internet connection and gadgets for the students and teachers.

Provide Teacher Training in AI

Structured programs of professional development can be created in Arabic for AI integration in… Workshops should be hands-on and relevant to classroom needs.

Create Inclusive AI Curricula.

Curriculum designers should collaborate with teachers to integrate AI tools to reflect the language and culture of Israeli students. This is especially important for English language teaching.

Establish Ongoing Support Systems.

Schools should have information technology and pedagogy experts so that teachers can get help with problems related to AI tools.

Monitor and Evaluate AI Implementation

The use of AI tools by schools and educational policymakers should periodically assess their effectiveness to improve policies and processes based on student and teacher feedback.

Conclusion

This study adds to research on artificial intelligence in education by focusing on an underrepresented context. Although AI can improve language learning, its success depends on solving challenges related to infrastructure, teaching practices, and language support. Future studies should examine AI use on a larger scale and use quantitative methods to confirm these results.

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