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# THE USE OF ARTIFICIAL INTELLIGENCE IN THE DEVELOPMENT OF FOREIGN LANGUAGE TEACHING MATERIALS

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## ABSTRACT

*With the advancement of technology, digitalisation has become an integral part of human life. In this context, it is evident that software such as artificial intelligence plays a significant role in people's lives. Consequently, artificial intelligence is frequently utilised across many sectors. Particularly in fields such as education, the use of artificial intelligence has led to the adoption of AI-supported software or applications in foreign language teaching. Artificial intelligence does not merely offer student-centred applications during foreign language education. It is also favoured by educators in the preparation of resources or materials. This is because it is believed that the materials currently used in foreign language education fall short due to their traditional nature and the fact that they are applied identically to every student. For this reason, artificial intelligence can be utilised to support the preparation of personalised and student-specific materials. Given the importance of the subject, the use of artificial intelligence in the preparation of foreign language teaching materials was examined within the scope of the research, and significant findings and conclusions related to the topic were obtained.*

**KEYWORDS:** Artificial Intelligence, Foreign Language Education, Foreign Language Teaching Materials, Artificial Intelligence and Foreign Languages, The Use of Artificial Intelligence in Foreign Language Teaching Materials.

## 1. INTRODUCTION

With the advancement of technology in recent times, we have entered a digital era. This transition has given rise to numerous significant software programmes and applications. Artificial intelligence ranks among the most important aspects to have become part of human life through digitalisation. Consequently, its use and benefits are evident across various fields.

The education sector is one of the primary areas where artificial intelligence is frequently utilised. In particular, the use of artificial intelligence is widespread in foreign language teaching. This is because such applications are favoured by many individuals for the convenience they offer during foreign language education.

Over the course of history, foreign language teaching has undergone numerous transformations in terms of technical methods and materials. In particular, as a result of the acceleration of digitalisation, the processes involved in preparing teaching materials have also changed significantly. In this context, it is becoming apparent that artificial intelligence technologies are beginning to form the basis of innovative applications in the field of education. Artificial intelligence, with its sub-fields such as machine learning, big data analysis and natural language processing, enables the creation of personalised and interactive learning environments. Consequently, the quality and variety of preferred materials in foreign language teaching have become far more important.

Traditional teaching materials in foreign language education are generally limited and static. Consequently, certain shortcomings arise because the content is presented to students in the same way. In particular, situations where foreign language education becomes less effective may arise due to a failure to take students' individual differences into account. Consequently, with the development of natural language processing technologies, applications such as the ability to analyse students' errors and provide immediate feedback have emerged. This makes it possible for students to develop their four core language skills in a more balanced and goal-oriented manner.

The teaching of foreign languages requires a wide range of materials and resources. However, as traditional resources tend to be similar and are applied to every student in the same way, there is a need to develop personalised materials and teaching methods. In this context, various artificial intelligence software programmes can provide support in the preparation of materials for foreign

language teaching. Consequently, given the importance of this topic, this research examines the use of artificial intelligence in the preparation of foreign language teaching materials.

With the advancement of technology, we have entered a digital age. As a result of this transition, technologies such as artificial intelligence have come into widespread use. Consequently, it is believed that artificial intelligence has become significantly more important due to its application in the field of education. For this reason, the details regarding the use of artificial intelligence in the preparation of materials for foreign language education have been examined under subheadings.

### *1.1. The Concept of Artificial Intelligence and Its Development Process*

With the rapid advancement of technology, the use of artificial intelligence in everyday life is steadily increasing. Artificial intelligence is attracting attention as a system that produces or constructs machines based on capabilities such as reasoning, manipulation, perception, learning and intelligent thought. Consequently, significant areas of application are emerging as a result of the adaptation of artificial intelligence to engineering and science. It attracts attention across a wide range of fields due to its impact on philosophy, psychology, computing, healthcare and many other areas. For this reason, it is predicted that in the coming years, intelligent machines will reach entirely new levels and completely replace humans (Verma, 2018, p. 9).

Artificial Intelligence (AI) was first defined by the researcher John McCarthy. In this definition, he described it as the engineering and science of creating intelligent computer programmes, specifically by intelligent machines. According to McCarthy's definition of AI, it is described as the performance by machines of mental activities carried out by humans and referred to as 'intelligence'. Consequently, in computer science, AI is also defined as devices containing intelligent agents that perceive their environment and act with the aim of maximising the probability of success in achieving any given objective (Akgerman et al., 2022, p. 22).

Due to the large number of significant studies being conducted on AI, certain researchers have come to the fore. Research conducted by Fritz and Dermody has led to new definitions of AI. According to this definition, AI is described as a computer algorithm capable of evaluating human movements and making decisions regarding a person's actions, whilst also functioning as a rational agent (Akalin & Veranyurt, 2020, p. 128-137).

With the continuous advancement of technology, research into artificial intelligence has gained momentum in parallel with the invention of computers. John McCarthy, one of the most significant figures in the history of artificial intelligence, paved the way for the use of the term 'Artificial Intelligence' with a proposal he presented at a conference held in Hannover, Germany, in 1955. The term has gained worldwide acceptance as it corresponds to the modern-day expression "artificial intelligence". Furthermore, the use of the "Logic Theorist" programme, considered the first AI software, laid the foundations for the evolution of artificial intelligence into its current form (Anohina, 2007, p. 48-55).

## **1.2. Current Tools Used in Foreign Language Education**

Popular technological tools encompass a wide range of technologies, such as computers, mobile phones, music players, CDs and podcasts. Consequently, as technology has advanced, various new tools have emerged. It is believed that the use of technology in education enhances success and yields positive outcomes in knowledge acquisition. Today, there are numerous applications used in the field of education. These are as follows (Klimova et al., 2023, p. 42-63);

- Virtual reality
- Cloud applications
- Artificial intelligence and robotics design
- Blockchain
- Digital immune systems
- Hyper-automation

The secure and accurate storage and delivery of data in education has become a highly sought-after area of expertise in universities. In particular, thanks to tools such as robotic process automation, new professions such as educational data scientists, augmented reality engineers, robotics researchers and artificial intelligence architects have emerged (United Nations-Technology and Innovation Report, 2023).

As the variety of technological tools in educational applications increases, there is a growing need for computer technology specialists, data scientists, technicians, engineers, digital managers, and competent professionals across many fields. A global report on the subject indicates that artificial intelligence is expanding not only across all sectors but particularly within educational applications. Consequently, it is anticipated that augmented reality, image and speech recognition navigation applications, smartphone personal assistants, and

numerous other technological tools will make their presence felt in the education sector. Such applications are preferred not only in language teaching but also across all educational fields (Shadiev & Wang, 2022).

Teachers frequently turn to technology to support their role in assessing pupils' activities, with the aim of imparting knowledge and monitoring pupils' progress. Pupils use technology to carry out research projects, analyse data, solve problems, design, and evaluate their work. Furthermore, students are able to collaborate with others in digital environments to generate new knowledge and insights (Timmis et al., 2015, p. 454-476).

Research developing new applications in the field of education provides up-to-date information on relevant practices. Studies on this topic have argued that resource sharing and the planning of education are particularly important in the design and implementation of web-based English-supported teaching systems (Demirekin, 2023, p. 630-631).

## **1.3. The Metaverse**

The Metaverse is a term defined as a 'digital universe' and is frequently used in educational applications. It also refers to a virtual world where users can interact with one another and their surroundings in real time. Consequently, it exists as a digital space that users can create, explore and even conduct transactions within on the Internet. The Metaverse makes it possible to create highly engaging and interactive virtual environments. It has gained popularity in educational applications in recent years, particularly with the rise of virtual reality technology. Furthermore, beyond merely facilitating education or socialisation, it possesses the potential to fundamentally transform the lives of individuals within the world of the internet and digital technology. Generally, the metaverse is regarded as a space that offers opportunities for innovation and creativity in education (Yaman & Öztürk, 2019).

## **1.4. Augmented Reality**

Augmented reality is a technology that enables the simultaneous perception of the real world and virtual objects superimposed onto real objects. As such, it has attracted attention as a technology that has emerged alongside technological advancements (Chung & Bong, 2022, p. 19-27).

When updates are made regarding the use of augmented reality technologies in the field of education, it is evident that many supported applications are being favoured. In particular,

augmented reality applications are used to add 3D capabilities to books, in educational content that develops cognitive and psychomotor skills, in making experimental content tangible, in foreign language teaching, and in many other areas. At the same time, they can be selected for the preparation of materials by contributing to the acquisition of skills and knowledge related to materials to be used in foreign language education (Sayımer & Küçükşaraç, 2015, p. 1536-1554).

### **1.5. Software Tools in Education**

Software tools are among the most frequently used resources in foreign language education. Tools such as blogs, SlideShare, Google Drive, video hosting platforms, and Windows Movie Maker enable significant applications in foreign language education (Karaca & Karaca, 2021, p. 1-8).

### **1.6. Extended Reality**

Extended reality encompasses virtual reality, mixed reality, augmented reality and all the technological applications in between. Consequently, it is frequently chosen by young people because it incorporates technologies that simulate the real environment. With technology that creates a reality devoid of any tangible presence, applications are emerging across numerous fields. It constitutes a significant digital application in the field of education, particularly as it is favoured by those learning foreign languages. Furthermore, it can be utilised for creating materials for teaching language-related subjects or other topics (Badilla-Quintana et al., 2020).

### **1.7. Cloud Applications**

Cloud applications serve as a space where various educational materials are stored in a virtual environment. Consequently, when the storage capacity of mobile phones and computers proves insufficient, cloud storage systems are utilised (Aydın, 2022, p. 2070-2075).

Due to the widespread use of cloud technologies

in fields such as education, they are becoming increasingly popular. Consequently, they offer numerous opportunities for students, teachers and educational institutions. Furthermore, they are among the most preferred tools for preparing materials in foreign language teaching (Anand & Kamayani, 2015, p. 150-152).

### **1.8. Artificial Intelligence in the Development of Foreign Language Teaching Materials**

With the rapid advancement of digital technologies today, the transformation of educational processes and the nature of materials used in foreign language teaching are being reshaped. Artificial intelligence, which lies at the heart of this transformation, offers significant contributions and advantages in the processes of preparing, adapting and personalising teaching materials. It is believed that, thanks to AI-supported tools, teachers can develop materials that are more responsive to students' needs, as well as being interactive and dynamic. Among the greatest contributions of AI to the material development process are the acceleration and diversification of content production. In particular, processes such as text generation, text simplification and grading can be carried out automatically through Natural Language Processing (NLP) technologies. Consequently, this provides teachers with significant benefits in the process of preparing materials suitable for different levels (Klimova, 2023, p. 42-63).

Artificial intelligence-based systems enable the development of personalised learning materials. By analysing students' learning speeds, learning styles and language proficiency levels, content can be tailored to suit each individual student. It is believed that this boosts learning motivation and leads to a significantly more successful learning process. To give an example, "Intelligent Tutoring Systems" continuously monitor students' performance, provide immediate feedback and update materials accordingly (Holmes et al., 2019).

Here's the table with the academic words used in context from the text, along with additional example sentences:

Academic Word	Word in Context	Example Sentence
significant	Before we highlight why homework is significant...	The discovery of a new species in the rainforest has a significant impact on our understanding of biodiversity.
factor	The first and foremost factor is the quantity of homework...	Nutrition and exercise are two important factors in maintaining a healthy lifestyle.
academically	Kids struggle academically when they do not have opportunities...	She was not only an exceptional athlete but also performed well academically.
area	Another area of complaint is due to a humongous amount...	The research team focused on a specific area of interest within the broader topic.
impact	There is no doubt that these factors impact their behavioral...	The new policies will have a considerable impact on the way we approach environmental issues.
overall	Affects their overall development by inducing stress...	The overall success of the project was due to the hard work and dedication of the team.
disadvantages	Keeping in mind the disadvantages of homework...	Despite the many advantages, there are some disadvantages to online learning as well.

Figure 1: Content Development for English Teachers Using Artificial Intelligence.

As a foreign language teacher, I find that visual elements play a significant role in the process of creating AI-supported materials. In particular, technologies that convert text into visuals or audio enable teachers to easily create rich multimedia content. This makes a significant contribution to the development of listening and speaking skills. Furthermore, AI systems supported by virtual reality and augmented reality applications enable students to learn using materials based on real-life scenario-based questions (Godwin-Jones, 2018, p. 1-17).

It is evident that, whilst artificial intelligence offers advantages in the material development process, it also brings with it certain limitations. In particular, there are some concerns regarding the accuracy, cultural appropriateness and pedagogical adequacy of the content. For this reason, it is recommended that the matter be handled with care and managed correctly under teacher supervision in

a manner consistent with the curriculum. Furthermore, certain shortcomings may be observed in areas such as ethical issues, security and student privacy (Luckin et al., 2016).

## 2. RESEARCH METHODOLOGY

The study examined the use of artificial intelligence in the preparation of foreign language teaching materials. In this context, details such as the aim, significance and methodology of the research – which form part of the study's methodology – were examined under subheadings.

### 2.1. Purpose of the Study

The aim of this study is to examine the use of artificial intelligence in the preparation of foreign language teaching materials. In this context, the study also aims to analyse the impact of artificial intelligence on resources used in foreign language

teaching. One of the study's secondary objectives is to contribute a significant body of knowledge to the relevant literature.

## 2.2. Significance of the Study

With the advancement of technology in recent years, it is evident that artificial intelligence – which has become an integral part of human life – is a relatively new and topical subject. Consequently, it is noticeable that sources relating to artificial intelligence have proliferated in the literature over the past five to six years. In particular, the scarcity of sources concerning the effects of artificial intelligence on foreign language education highlights the importance of this study. Furthermore, the fact that there are very few sources regarding the use of artificial intelligence in the preparation of foreign language teaching materials renders this study even more significant. In this context, the aim of contributing a source of information on the subject to the literature also serves to demonstrate the importance of this study.

## 2.3. Research Method

The study employs a literature review methodology. In this context, relevant sources from the existing literature on the subject have been compiled and utilised in the study in an original manner through a systematic review. As a result of the key sources drawn from the literature, significant findings and conclusions regarding the subject have been obtained.

## 3. CONCLUSION AND DISCUSSION

This study examined the impact of artificial intelligence on the development of foreign language teaching materials. Significant findings were obtained regarding the use of artificial intelligence in the preparation of materials for foreign language teaching.

Among the findings of the research, the areas of application of artificial intelligence are particularly noteworthy. It has been observed that artificial intelligence, which emerged in the 1950s, has undergone significant development over time, moving beyond mere software to take centre stage in human life. Initially met with scepticism by people and unable to achieve the necessary interaction, artificial intelligence has, as a result of the level it has reached over time, gained acceptance among people. This acceptance has, in subsequent periods, led to it becoming a habit and even to the widespread use of artificial intelligence. Consequently, the study has established that artificial intelligence is used in many

sectors and occupies a central position.

Another finding from the research stems from the use of artificial intelligence in education. The application of technology in such a vital field as education has led to artificial intelligence making a direct contribution to teaching. It has been observed that artificial intelligence has an impact not only on students but also on teachers and educational institutions.

According to the findings of the study, artificial intelligence has been shown to have significant effects on teachers. In particular, it has been established that utilising artificial intelligence in the preparation of materials for foreign language education offers numerous benefits. The inadequacy of current traditional resources and the fact that virtually the same resources are provided to every student lead to certain drawbacks in foreign language learning. This is because differences are observed from student to student during foreign language education. Due to such differences, creating materials or resources tailored to the individual student to provide personalised education maximises efficiency. However, as this desired outcome cannot be achieved with traditional resources, software such as artificial intelligence can be utilised. In this way, educators can make foreign language learning much more efficient by preparing materials and producing content tailored to the students' level.

The study found that among the most significant contributions of artificial intelligence in the field of material development are the acceleration and diversification of content production. In this context, thanks to Natural Language Processing (NLP) technologies, processes such as text generation, text simplification and level adjustment can be carried out automatically. In particular, it has been established that this provides significant benefits to teachers in preparing materials suitable for different language levels.

The study found that the production of audio and visual content in AI-supported material preparation processes also makes a significant contribution to foreign language learning. Consequently, it has become apparent that, with the help of text-to-image or text-to-speech conversion technologies, teachers can easily create rich multimedia content. As a result, significant improvements are being achieved in the development of listening and speaking skills.

In conclusion, as technology continues to advance day by day, artificial intelligence – which has taken on a completely different role in human life – has been shown to make significant contributions to

maximising success and efficiency in the field of foreign language education.

Consequently, it is recommended that artificial

intelligence be used correctly in the preparation of teaching materials during foreign language instruction.

## REFERENCES

- Akalın, B. & Veranyurt, Ü., (2020). Sağlıkta Dijitalleşme ve Yapay Zekâ, *SDÜ Sağlık Yönetimi Dergisi*, 2(2), 128-137.
- Akgerman, A., Özdemir Yavuz, E. D., Kavaslar, İ. & Güngör, S., (2022). Yapay Zekâ ve Hemsirelik, *JAIHS (Journal of Artificial Intelligence in Health Sciences)*, 2(1): 21-27.
- Anand, H. S. & Kamayani, H., (2015). Scope of cloud computing in educational sector, *International Journal of Recent Research Aspects*, 2(2): 150-152.
- Anohina, A., (2007). Advances in intelligent tutoring systems: problem-solving modes and model of hints, *International Journal of Computers Communications Control*, 2(1): 48-55.
- Aydın, N., (2022). Bulut bilişim eticaretin geleceğini nasıl etkileyecek. *Journal of Social, Humanities and Administrative Sciences*, 8(59): 2070-2075.
- Badilla-Quintana, M. G., Sepulveda-Valenzuela, E. & Salazar-Arias, M., (2020). Augmented reality as a sustainable technology to improve academic achievement in students with and without special educational needs, *Sustainability*, 12(19), 8116. <https://doi.org/10.3390/su12198116>.
- Chung, B. & Bong, H. K., (2022). A study on the intelligibility of Korean-Accented English: Possibilities of implementing AI applications in English education, *Journal Asia TEFL*, 19(1): 19-27.
- Demirekin, M., (2023). Dil Öğretiminde Güncel Yeni Teknolojiler. *Akademik Tarih ve Düşünce Dergisi*, 10 (3): 627-641.
- Godwin-Jones, R., (2018). Using mobile technology to develop language skills and cultural understanding, *Language Learning & Technology*, 22(3): 1-17.
- Holmes, W., Bialik, M. & Fadel, C., (2019). *Artificial Intelligence in Education: Promises and Implications for Teaching and Learning*, Center for Curriculum Redesign, Boston.
- Karaca, İ. & Karaca, N., (2021). 2023 Vizyon Belgesi'nin dijitalleşme açısından incelenmesi, *Ulusal Eğitim Akademisi Dergisi (UEAD)*, 5(1): 1-8.
- Klimova, B., Pikhart, M., Polakova, P., Cerna, M., Yayılğan, S.Y. & Shaikh, S. A., (2023). Systematic review on the use of emerging technologies in teaching english as an applied language at the university level. *Systems*, 11(1): 42-63. <https://doi.org/10.3390/systems11010042>.
- Luckin, R., Holmes, W., Griffiths, M. & Forcier, L. B., (2016). *Intelligence Unleashed: An Argument for AI in Education*, Pearson, London.
- Sayımer, İ. & Küçüksaraç, B., (2015). Yeni teknolojilerin üniversite eğitimine katkısı: İletişim fakültesi öğrencilerinin artırılmış gerçeklik uygulamalarına ilişkin görüşleri, *International Journal of Human Sciences*, 12(2): 1536-1554. <http://doi.org/10.14687/ijhs.v12i2.3488>.
- Shadiev, R. & Wang, X., (2022). A Review of Research on Technology-Supported Language Learning and 21st Century Skills. *Front. Psychol*, 13, 897689, <https://www.frontiersin.org/articles/10.3389/fpsyg.2022.897689/full>.
- Timmis, S., Broadfoot, P., Sutherland, R. & Oldfield, A., (2015). Rethinking assessment in a digital age: opportunities, challenges and risks. *British Educational Research Journal Early View*, 42(3): 454-476. <https://doi.org/10.1002/berj.3215>.
- United Nations-Technology and Innovation Report, (2023). *Opening green windows Technological opportunities for a low-carbon world*. [https://unctad.org/system/files/official-document/tir2023\\_en.pdf](https://unctad.org/system/files/official-document/tir2023_en.pdf).
- Verma, M., (2018). Artificial intelligence and its scope in different areas with special reference to the field of education, *International Journal of Advanced Educational Research*, 3 (1): 5-10.
- Yaman, M. & Öztürk, Ö., (2019). *Metaların kerameti*, İletişim Yayınları, Ankara.