



The Role of Technology in Era 5.0 in the Development of Arabic Language in the World of Education

Masahiko Keshav ¹, Laura Julien ², Jessica Miezal ³

¹ *Universidad Galileo, Guatemala*

² *Bolivarian University of Venezuela, Venezuela*

³ *Northern Caribbean University, Jamaica*

Corresponding Author: Masahiko Keshav, E-mail; masahikokeshav123@gmail.com

Article Information:

Received July 29, 2022

Revised August 3, 2022

Accepted August 4, 2022

ABSTRACT

Along with the development of the times, the world is currently entering the 5.0 era, which means that all must be prepared for technology in this era, including the Indonesian education system. And this research focuses on the role of technology in era 5.0 on the development of the Arabic language in education. The type of research conducted is *library research* which is processed qualitatively. The primary data sources in this research are international journals. The secondary data sources in this study were books and national journals related to technology in the 5.0 era and those related to learning Arabic. The results of this study explain how important the role of technology in era 5.0 in learning Arabic is because Arabic is often categorized as a lesson that is considered difficult to understand, and in the learning process, it is often considered boring because of the rigidity of the Arabic learning process with technology that follows developments. The times will make it easier for educators and students and will also attract students' interest in carrying out the learning process, especially in learning Arabic.

Keywords: *Arabic Language, Era 5.0, World Of Education*

Journal Homepage

<https://ejournal.staialhikmahpariangan.ac.id/Journal/index.php/jiltech/>

This is an open access article under the CC BY SA license

<https://creativecommons.org/licenses/by-sa/4.0/>

How to cite:

Keshav, M., Julien, L., & Miezal, J. (2022). The Role of Technology in Era 5.0 in the Development of Arabic Language in the World of Education. *Journal International of Lingua and Technology*, 1(2), 79–98. <https://doi.org/10.55849/jiltech.v1i2.85>

Published by:

Sekolah Tinggi Agama Islam Al-Hikmah Pariangan Batusangkar

INTRODUCTION

Along with the times, the Indonesian education system is currently preparing to enter the era of the 5.0 social revolution. Society 5.0 has the concept of big data technology (Sugiono, 2020), which is collected from the Internet of Things (IoT) and then transformed by artificial intelligence into something that can help people live a better life (Majir & Nasar, 2021). Like Industry 4.0, society 5.0 will affect all aspects of

life, including education. Society 5.0 is a concept proposed by Japan on January 21, 2019 (Narvaez Rojas et al., 2021). In fact, Society 5.0 is the antithesis of Industrial Revolution 4.0 which eliminates the role of humans through automation, digitalization and capitalism in global industrialization projects (Lin, 2021). The era of society 5.0 serves to help various human needs to achieve a better life. The difference between Industry 4.0 and Society 5.0 makes humans the main technology center to restore human life by utilizing the Internet of Things (IoT), Big Data and Artificial Intelligence (Wu, 2019). IoT (Internet of Things) is a technology that makes it possible to connect physical objects to the Internet (Awadallah, 2019). With this technology, objects can be connected to the Internet and controlled by others, even remotely. An example of this technology product is the GPS (Global Positioning System) service. Big data is a breakthrough in database systems. Simply put, Big data is a large amount of data collected at high speed. Using Big Data can help people to collect data or information and analyze it quickly and effectively to make accurate and right decisions.

Artificial Intelligence is an artificial intelligence created by computers to think like humans (Ting, 2019). Artificial Intelligence can be a machine or software designed and trained to obtain information and regulate the use of information, using rules for final reasoning and self-correction (Guzman, 2020). There are two ways to develop an Artificial Intelligence system: a weak Artificial Intelligence, which is designed and trained to perform certain tasks, and a strong Artificial Intelligence, which is designed to have the cognitive ability to find solutions without human assistance (Raisch, 2021). Artificial Intelligence systems allow Artificial Intelligence embedded machines to be smarter as more data is collected. In society 5.0, Big Data technology collected by AOT has been transformed by AI to help people in their lives (Wirtz, 2019). As for the world of education, Society 5.0 allows students to learn in front of special machines designed to replace educators or controlled by educators. One of the impacts of technological developments (Industrial Age 4.0 and Society 5.0) is an increase in digital literacy. This condition allows easy access to online information, including information about religion. In addition to religious education institutions, Islamic boarding schools also function as institutions that instill religion. Therefore, sermons and educational media or technology-based learning are very important.

The rapid changes in science and technology require us to be ready to face changes in the world, especially in the field of education. One such change is Society 5.0 (Ozyhar, 2021). Society 5.0 is a human being who can solve various challenges and social problems by using various innovations born in the era of the industrial revolution 4.0 and focusing on technology (Wang, 2021). Society 5.0 itself was first introduced by the Japanese government in 2019. Society 5.0 is an evolution of the industrial revolution 4.0. revolution 4.0 uses artificial intelligence (artificial intelligence), while society 5.0 focuses on technological and human components (Adir, 2020). Education plays an important role in the development of society 5.0 to improve the quality of human resources (Talaviya, 2020). Currently, the advancement of internet technology has grown very rapidly, and technological developments continue to skyrocket to try to

meet global needs. In this case, we already know the industrial revolution 4.0 or the era of information technology which at least has the main pillars that were presented at the Hannover Messe in Germany in 2011, namely digital society, sustainable energy, smart mobility, healthy living, civil security and social security. Technology at work center. Indonesia is one of the countries that applies the concept of the industrial revolution 4.0. Then what is the difference with the era of Society 5.0? This concept was created to look back on the 4.0 revolution era which is currently a globalization trend that will create new innovations from time to time and also for some of the general public. The goal of the social age 5.0 concept is that people really enjoy life and feel good. This is a solution to the industrial revolution 4.0 which is feared to be degrading to humanity.

In general, society 5.0 is a society that can solve various challenges and social problems around it by using various types of innovations and new developments that occurred in the era of the industrial revolution 4.0, such as the internet of things, Artificial Intelligence or artificial intelligence such as robots, Big Data or data in large numbers (Pham, 2020). Society 5.0 is more towards artificial intelligence or artificial intelligence, which can facilitate people in the field of technology and have more opportunities to do or analyze things with robots, and facilitate heavy work such as analyzing large amounts of information that requires work to shorten (Tikhamrine, 2020). With the presence of the era of society 5.0 as a new innovation, the industrial revolution 4.0 is a public response that technology plays a very important role in the survival of mankind, and the network system in cyberspace is an optimal result. The existence of artificial intelligence with the incorporation of big data technology has been obtained, which can be a feedback value in the field of industry and society from the impossible to the possible.

The era of Society 5.0 can be defined as intelligent citizens who can integrate the physical world and the virtual world using adaptability, agility, movement and responsiveness (Hsu et al., 2017). The concept that was carried in the era of Society 5.0 is a life centered on technology. In line with that, education on the concept of social era 5.0 must prioritize the development of creativity that uses technology to improve the quality of learning (Ievgeniia, 2022). Both educators and students are facing the digital era using special features. Lestiani said that the generation born in this digital era is a digital native since birth and has been familiar with various digital devices, such as personal computers, gadgets, video games, digital music players, cameras and digital era tools. Internet and personal computers are senses that facilitate the teaching process. The advent of the internet & the speed of search engines gave birth to the digital literacy movement (Sari, 2019). Searching for theories, concepts, practices & all kinds of knowledge through the internet is very easy & fast. Technological developments are rapidly spreading to human social activities. Even the learning process can be completed through online courses through social media. Online social media is used to share, participate and create content on blogs or social networks. The variety of social media is always growing, but in Indonesia only a few widely used public media such as

Facebook, Twitter, Instagram, WhatsApp, Youtube and Line. This general media application is the meaning of technological development that refers to social activities.

These media make it easy for people to have social relations without being hindered by space and time. Some of the studies below indicate the effectiveness of using social media. In particular, research on the use of general media in learning Arabic is as follows; First, the research conducted (Ilmiani et al., 2020) in his research stated that WhatsApp media is one of the most popular public media used in learning Arabic. Second, the research conducted (Linur & Mubarak, 2020) regarding the use of Facebook has been proven to be effective in improving writing skills in Arabic learning. Third, research was conducted (Audina & Muassomah, 2020) about Instagram as an alternative media to improve Arabic language skills. In addition, it is undeniable that students tend to spend more time interacting using their gadgets than using real social relationships. They are more interested in using social activities in cyberspace, especially in the learning principles of the Society 5.0 era, students can freely choose and have full autonomy in forming active, aggressive and fun learning for themselves. From this requirement, it is known that the use of public media is one of the developments in learning technology which can be said to be a new forum for the language environment. In terms of using foreign language learning, the language environment is one of the most influential factors in language learning. As mentioned (Muhamad, 2021), environmental factors based on the behavioristic theory in his writings stated that the language environment greatly affects the language learning process.

Rapid technological changes have brought complexity (Ozyhar, 2021). Advances in technology today allow automation in almost all fields. This is the impact of the era of the industrial revolution 4.0. Society 5.0 is a reflection of citizens who can solve various challenges and social conflicts by utilizing various inventions that were born in the era of the industrial revolution 4.0, such as the internet of things (the internet for everything), artificial intelligence (artificial intelligence), big data (data on a large number of people). Large robots are useful for enhancing the quality of human life (Nadarzynski, 2019). In the global economic institution, ten skills that must be possessed are formulated in order to face the super smart society earlier. The three highest skills required are the ability to solve complex cases, critical thinking and creativity. Mastery of the three primary skills needed is a global responsibility for education, including Arabic language education itself (Al-Yahya, 2019). In the context of Arabic language education, in order to face society 5.0, several components need to be developed. Among others, the way of thinking that must always be introduced is a way of thinking to follow the situation in the future, namely analytical, critical, and creative (Jindal, 2017). That way of thinking is considered a high-level way of thinking (HOTS: Higher Order Thinking Skills).

HOTS-style thinking is not ordinary thinking but thinking in a complex, tiered, and systematic way (Fiske, 2019). Arabic language education is, in fact, futuristic in nature, introducing learning that is not only dominated by material but also needs to

connect it using uses for the progress of citizens (Sundus, 2019). Selection of the perfect learning model to give students space to discover the concept of knowledge and creativity. Teachers may specify various examples of learning, such as discovery learning, project-based learning, dilemma-based learning, and inquiry learning. Teacher competency improvement. Competence in the cognitive, affective and psychomotor domains among Arabic language education teachers also needs to be improved so that they are able to follow the situation using industry 4.0 and society 5.0 through scientific insight, behavior and skills. Provision of facilities and infrastructure as well as futuristic learning resources according to the need in the form of IT-based smart buildings in the form of learning rooms, libraries, and laboratories supported by IoT and AI facilities that support learning resources and media from learning itself.

The emergence of Era Society 5.0, which was spearheaded by the Japanese state in 2019, had a major impact on global education (Partel, 2019). The development of digital-based technology has eroded the current of concrete global social relations, as a result of which relative social relations are through digital. Social & humanism character shifts to virtual global (Yang, 2019). The flow of social relations affects the field of education. As a result, global education can be done relatively using the network (DARING) (Khayyat, 2020). The era of Society 5.0 was formed as anticipation based on the disruptive turmoil of the industrial revolution 4.0, which resulted in complex and ambiguous uncertainty (VUCA) (Chettri, 2020). It is feared that the invasion could erode the values of humanism that have been maintained so far. The era of society 5.0 suggests the framework of education in Indonesia. This influence has a major impact on human resources and education. In this Era of Society, automatically, human resources are required to upgrade their competence to literacy, technology & more professionalism. Soft skills & hard skills competencies are the primary emphasis for development (Alkhatlan, 2020). Teachers are not only able to master the material, condition the class but also must be able to arouse the enthusiasm of students to learn, as role models, and master technology using minimal standards to be able to apply technology to teaching. Soft skills of teachers in the form of good educator characters, good morals, steadfast and visionary for educators. Hard skills are things that are related to the professionalism of teachers in teaching. These things are related to using the ability to dominate the material, the ability to condition the class, teaching tactics, learning administration & the professionalism of competent teachers.

Changes in the character and learning styles of generations/students in the era of society are also a result of technological advances (Habib, 2021). Students prefer instant learning styles, taking notes on material by taking photos on the blackboard, searching for material with devices, and learning how to use computers and internet media easily (Baniata, 2018). What teachers say in class is rarely written down or documented in their books. Generation Era Society 5.0 also prefers to do many jobs at once. In addition to interacting on social networks to discuss the latest developments, they also study school material from time to time. This is the Era Society generation who are getting smarter and smarter in learning and interacting socially at the same time (El-Affendi,

2021). Along with this, the Indonesian government launched a learning and education model with the concept of learning independence. Learning is no longer limited by space and time, face to face, learning only from books, learning only by listening to the teacher tell stories while explaining the material, but more than that, students prefer to learn on the basis of discourse, life problems, activities and projects (Kanan, 2019). Based on an authentic analysis of real life, fields and materials, they discuss learning and the learning process. Students also have easy access to materials on digital platforms such as Google Classroom, etc. Students find it easy to learn just by using WAG, Instagram, Line, etc. and only learn with tutorials (Madi, 2018).

In the world of Islamic studies and Islamic education, Arabic is important because Arabic allows students to learn material taken from Arabic books (Zahidi, 2021). Arabic is a tool to help them learn material and access knowledge (Marie-Sainte, 2019). Arabic has had a great influence on the education movement in Indonesia. Arabic is a trend of the current generation of Islam in the era of society. In the past, Arabic was only a language for studying Islamic religious knowledge, but now Arabic has become a language that is studied for world affairs, work, and certain missions. With Arabic, people are more civilized, live better in society, and are better able to develop careers and survive in society. Therefore, the author wants to explain how the role of Arabic in society is aged five years. In the paradigm of education in Indonesia, especially in universities. The development of Arabic in Indonesia is currently very good. Arabic has become a trend for the current generation in Indonesia. In addition to being part of the Islamic religion, Arabic has been used in general for world affairs and certain missions (Elarnaoty, 2018). Arabic is not only studied by Muslims but has also been studied by many non-Muslims. That is, Arabic is a language that is always unique to learn and very useful. Arabic is a language that is timeless or erased by time because it continues to grow and is dynamic to be studied as a science and as a key to scientific civilization (A. Abdullah, 2019).

In Indonesia, Arabic is studied in Islamic boarding schools and Islamic boarding schools. The government, through the Ministry of Religion, develops Arabic through the Islamic religious education curriculum. Government support is in line with the spread of Arabic in Indonesia. Arabic is also learned in informal courses and training institutions and through social networks (Ismail, 2018). This proves that Arabic is fused with Indonesian society and forms a new culture by acculturating Indonesian culture with Arabic culture. The role of Arabic is very important in the development of the Indonesian language, which makes Arabic the favorite language of the Indonesian people. With a unique vocabulary and expressions that match the polite behavior of Indonesians, Arabic plays a very important role in Indonesia. The functions of Arabic in Indonesia in education include 1. Arabic as a tool. In the context of Arabic education, it functions as a) Arabic as a tool for worship (prayer, hajj, umrah, etc.), b) Arabic as a tool to understand the Holy Quran, Hadith, and the Classical Books of Religion, c) Arabic as a means of communication (with indigenous peoples) or Arabs d) Arabic as a tool for writing, reading (grammar rules, calligraphy, khat, correspondence, etc.) e)

Arabic as a tool for diplomacy and international cooperation (in all fields) 2. Arabic as an object (Object).

In the context of Arabic language education as material: a) Because Arabic is dynamic along with the growth of humans, society/society, Arabic is studied in the context of psychosociolinguistic studies; b) Arabic is a language/language family, so Arabic will always overlap with other languages. Arabic offers scientific treasures that continue to grow along with the development of new vocabulary, uslub/phrases, and phrases. 3. Arabic as a Subject (Actor/Motivator) In this case, Arabic is a form and influence in the fields of politics, economy and education in Indonesia (Ahmed, 2019). The existence of Arabic as part of Islam makes Arabic a perfect complement to Indonesian and creates a social community for Indonesian people who love Arabic. Arabic is also a major field that helps build ethics and behavior of the Indonesian people to become more educated and religious so that they can be accepted by the wider community in Indonesia because the character of Arabic builds a religious, holy and optimistic spirit of life that makes Arab society one with love (Wahba, 2017). On the other hand, Arabic has become the government's main tool for political deals with Middle Eastern countries, especially with Saudi Arabia for Hajj, Umrah and the world of mining and oil. Not only that, but Arabic also has a major impact on the economy and trade in basic necessities such as food and clothing (Romeo, 2019). Indonesians consume a lot of Aran food and Arab-style clothing. This is an important issue in the era of society 5.0 in Indonesia today.

Fourth, Arabic for special missions Arabic also has a significant influence on Indonesian society in particular. Especially in the field of research that the Indonesian people have a program to conduct halal tourism (syar'i), which will later become tourism for Middle Eastern tourists who are interested in coming to Indonesia (Benmamoun, 2018). Arabic for needs also has an impact in the world of work (course institutions, training, studies both in organizations and in social networks). Arabic has also become a quality standard for madrasas, Islamic boarding schools and universities (Arabic/Toafl proficiency standards). So what is the role of Arabic in the educational paradigm of the Society 5.0 era? The Era of Society changed the paradigm of learning and learning. Whatever the learning model, whatever the medium, Arabic remains the center of study in education. In the world of Arabic, education has a very important role as a tool and object. So that Arabic can make it easier for humans to innovate and develop careers and survive in a diverse and complex society. Until when, however it is said, the Arabic people will never die. Even if all the speakers on this earth have perished, the Arabic language will always exist and survive because the language of the Koran is guaranteed direct attention from Allah SWT as the revelator (Alqurashi, 2022).

In this case, Jabir Qumaihah, quoted by Abdus Salim Mukram, emphasized that Arabic is a language that is guaranteed and protected or directly protected by Allah SWT (MS Abdullah, 2017). In other words, as said by Abdus Shabur Shahin, the Koran plays an important role in the cultivation and preservation of the Arabic language (Alqurashi, 2022). Therefore, it is not an exaggeration to say that Arabic is not only in

this world but also in the hereafter because it is the language of the experts of heaven and the language of the angels. In the preface to the fatwa book *kabbaru al Kuttâb wa al adibba*, Bengrad also emphasized that the Arabic language will live forever. It will always live in mosques, in religious pulpits, on some pages of newspapers and others in other official programs or events. Jaber Dumit also explained the same thing in his article. This professor of Arabic at the American University of Beirut said that as long as Islam existed and continues to exist, the language of the Koran, Hadith, and all Arabic literature from the prophetic period to the present day will remain the strongest. Language is compared to European languages by trying and digesting different common dialects. Therefore it will always be the language of science, the language of learners, the language of writers, the language of the electrician, and the language of writers. Therefore, it is undeniable that the Arabic language will exist forever, especially among Muslims themselves.

In addition, until now, in this digital era, since Arabic was designated as one of the official languages in the United Nations on December 18, 1973, which is one of the many and widely used languages in the world, both orally, in writing, In science and technology, Arabic is still in Wafa Kamil, quoted by Ubaid Rida in a journal article which states that Arabic now ranks fifth among the twenty languages in the world in terms of native speakers. The order is 1. Chinese with more than one billion native speakers, 2. English with more than four hundred million speakers, Spanish with more than two hundred and fifty million speakers, 4. Indian language with more than two hundred million speakers and 5. Arabic with more than one hundred and fifty million speakers. Meanwhile, in terms of its use as an official language with more than 170 million users, Arabic ranks seventh, after English which ranks first with more than fifteen hundred million users, followed by Chinese with more than one billion Indian language users (Alharbi, 2021). Over seven hundred million, Spain two hundred and eighty million, Russia two hundred and seventy million and France two hundred and twenty million. In terms of the number of countries that have adopted Arabic as an official language, Arabic now ranks third after English and Spanish. Arabic also ranks fourth in terms of prevalence (distribution) of users after Chinese, English and Spanish. In fact, after the tragedy of 9/11, Arabic became one of the most popular languages studied by western countries, especially America.

All of this, of course, shows that in this digital era, Arabic may still exist and even tend to see significant progress in non-Arab countries. On this basis, Morocco and Saudi Arabia, as members of UNESCO (Organization of Education, Science and Culture of the United Nations) 2010, began to propose an organization under the auspices of the United Nations, namely on December 18 as the date of the stipulation of Arabic as a language. An official of the United Nations Organization and is also celebrated for World Arabic Language Day. In today's digital era, it must be admitted that the existence of Arabic is certainly inferior to English. This, as Ubaid Rida wrote in his journal article, is caused by the high consumption culture in Arab countries, in addition to the explosion of information about whether the English language is realized or not,

which has begun to penetrate the social system of the Arab nation itself. For example, in the world of education and Arabic language schools, especially in exact subjects such as B: chemistry, physics, mathematics and biology as well as books in English. Likewise, in the world of technology, foreign language vocabulary cannot be suppressed. The sad thing is, the vocabulary can be accepted as it is because, socially, it is seen as a modern human being. So what happened was the change in foreign language sentences written only from Latin to Arabic while the sound remained the same. Such as words: laptop, mouse, keyboard, cell phone and other words.

The conditions are not like in the Middle Ages or the second Hijri. Where at that time, a lot of foreign vocabulary appeared but was not immediately absorbed. Rough that time, there was a very strict procedure. Where foreign vocabulary intervenes, look for as much meaningful vocabulary as possible. Otherwise, it will be translated. If you still can't, just accept it as it is. Furthermore, the jealousy of the orientalist towards Arabic should not be underestimated. They always try to develop regional dialects ('Ammiyah Arabic) to replace classical Arabic (Arabic Fushha) or the language of the Koran (Can, 2020). Abdus Shabur Syahin said that the Arabic language faces some serious challenges in the current era. First, in this era of globalization, the use of Arabic fushha among the Arab community itself has begun to decrease in frequency and proportion. They tend to use ammmiyah Arabic rather than fushha. Second, the reality of the Arabic language today is facing global challenges, namely the challenges of western lifestyles and colonialism, including the spread of Arabic in the Islamic world. Such colonization, although not necessarily able to change the position of Arabic, they are able or can weaken the interest of the younger generation to learn Arabic. Third, silence the massive movement to distance faith and morals from Islam among today's young generation from sources of Islamic teachings with a bad image of Arabic, which is said to be quite complicated and even difficult to learn.

At the same time, a campaign was carried out in the name of globalization in order to spread the English language and make the language the most suitable for the progress of the times and today's technology. However, this does not mean that the Arabic language does not have any hope of developing and taking a leading position because it existed in the Middle Ages. Because all the obstacles and challenges faced will certainly bring opportunities as long as we face those obstacles and challenges with positive thinking and filled with sincerity as well. Wisdom, including the challenges faced by the Arabs in the globalization and digital era as it is now. Muhibb Abdul Wahab said in his book *Epistemology and Methodology of Learning Arabic* that there are several hopes that Arabic can achieve in the future if Arab activists and enthusiasts together can change the challenges. It becomes an opportunity. First of all, making Arabic the main means and capital to seek and obtain other people outside of Arabic, both in terms of knowledge and oral communication skills. Second teacher professional development. Third, activate and cultivate research traditions and develop Arabic learning methods so that knowledge and Arabic learning methods develop dynamically. Fourth, intensify the translation of Arabic works, both on science and Islam. Fifth,

expand access and cooperation with external parties, including through the Ministry of Foreign Affairs, so that Arabic positions are filled by Arabic language education graduates who are interested in a career in diplomacy and politics. The sixth is the development of technology and media in the Arabic learning process that is able to create simple, fast, accurate and effective media in carrying out a learning process. And the seventh is the time for Arabic language enthusiasts to produce scientific works that can enlighten many people about the urgency and importance of the Arabic language

Based on the explanation above, the researchers conducted research on the role of technology in era 5.0 in Arabic lessons that will help educators and students improve the quality of the learning process. This research is important to do because it will add to our insight regarding technology that will make it easier for educators and students to learn Arabic, considering that Arabic is often categorized as a lesson that is considered difficult to understand. The researcher hopes that this research will change the minds of people who think that the Arabic language learning process tends to be monotonous because there is no variation in the learning process, even though Arabic learning can also keep up with the times and utilize technology used as a learning medium. Arabic can create the Arabic learning process to be more creative, innovative and no longer monotonous in the learning process by utilizing all the advantages of existing technology. And in this study, various advantages of technology in the 5.0 era will be presented, both in the form of technology itself and in the form of applications and the like that can be utilized as much as possible by an educator to help create and facilitate their learning process, especially in learning Arabic. Researchers also hope that there will be other studies that will examine similar discussions to add insight and refine the results of this study.

RESEARCH METHODOLOGY

This research is descriptive qualitative research. This research method is to explain the content of certain material, information or readings in detail and also in-depth (Borger, 2022). The explanation was carried out on various articles in national and international journals related to the role of technology in era 5.0 in Arabic language learning, which was analyzed through supporting literature libraries and data collected using words. The discussion in this article uses a library research design where the data sources of this research are books and national and international journals, and other library sources (Wijewickrema, 2022). And in this study, data collection was obtained from books and online journals. Researchers searched these journals by using the keywords the role of technology era 5.0 and learning Arabic. Based on the search for keywords, the role of technology in the 5.0 era and learning Arabic, the author obtained various kinds of books and national and international journals. The criteria for the selected books and journals are the discussion on the role of technology 5.0 and learning Arabic. From the various sources obtained, the most relevant sources are selected for the discussion being sought. The research technique is done with documentation, which

is looking for data about things or variables in the form of books, articles and journals, as well as other library sources.

In addition to using the above method, this research also uses the *descriptive content analysis study* method, which is related to analyzing the contents of various readings or texts and the like related to the discussion to be discussed (Alzubaidi, 2022). In this study, of course, readings or related texts regarding useful technology can be used as media to help learn Arabic in the world of education. The criteria for the reading or text selected are by discussing the role of technology 5.0 and learning Arabic. From the various sources obtained, the most relevant sources are selected for the discussion being sought. The research technique is done with documentation, which is looking for data about things or variables in the form of books, articles and journals, as well as other library sources.

RESULT AND DISCUSSION

Basically, modern technology is intended as a science that is converted into a product, service process and organizational structure. The technology basically has three functions, namely functioning as a tool with the use as a tool for users or students for learning than technology also functions as science and finally technology functions as a material or tool in learning to master a competency assisted by a computer (Wang, 2007). 2021). Then technology also has two functions, namely as a complementary function. This complementary function can be said to be so if the content or material from learning using technology media is used to complement the teaching materials that will be accepted by students in the learning process. That is, there is direct learning that is presented face-to-face, and some of them use the internet, and the third fully uses the internet or existing technology without having to do face-to-face between an educator and students.

Along with the times, the Indonesian education system is currently preparing to enter the era of the 5.0 social revolution. Society 5.0 has the concept of big data technology (Sugiono, 2020), which is collected from the Internet of Things (IoT) and then transformed by artificial intelligence into something that can help people live a better life (Majir & Nasar, 2021). Like Industry 4.0, society 5.0 will affect all aspects of life, including education. Society 5.0 is a concept proposed by Japan on January 21, 2019 (Narvaez Rojas et al., 2021). In fact, Society 5.0 is the antithesis of Industrial Revolution 4.0 which eliminates the role of humans through automation, digitalization and capitalism in global industrialization projects (Lin, 2021). The era of society 5.0 serves to help various human needs to achieve a better life. The difference between Industry 4.0 and Society 5.0 makes humans the main technology center to restore human life by utilizing the Internet of Things (IoT), Big Data and Artificial Intelligence (Wu, 2019). IoT (Internet of Things) is a technology that makes it possible to connect physical objects to the Internet (Awadallah, 2019). With this technology, objects can be connected to the Internet and controlled by others, even remotely. An example of this technology product is the GPS (Global Positioning System) service. Big data is a

breakthrough in database systems. Simply put, Big data is a large amount of data collected at high speed. Using Big Data can help people to collect data or information and analyze it quickly and effectively to make accurate and right decisions.

The rapid changes in science and technology require us to be ready to face changes in the world, especially in the field of education. One such change is Society 5.0 (Ozyhar, 2021). Society 5.0 is a human being who can solve various challenges and social problems by using various innovations born in the era of the industrial revolution 4.0 and focusing on technology (Wang, 2021). The variety of social media is always evolving, but in Indonesia, only a few widely used public media, such as Facebook, Twitter, Instagram, WhatsApp, Youtube and Line. This general media application is the meaning of technological development that refers to social activities. Society 5.0 focuses on the technological and human components (Adir, 2020). Education plays an important role in the development of society 5.0 to improve the quality of human resources (Talaviya, 2020). Currently, the advancement of internet technology has grown very rapidly, and technological developments continue to skyrocket to try to meet global needs.

The process of learning Arabic is one the lessons that cannot be avoided because Arabic is one of the most important languages in the world, especially for Muslims. We can see this from the number of educational institutions in countries, especially in Indonesia, in madrasas, madrasas, pesantren and other educational institutions. There are so many reasons why Arabic is important to learn, especially for Muslims themselves. Among them: the motivation of Islam because the holy book of Islam itself uses Arabic and to study the knowledge contained in the holy book of Islam and also books that use other Arabic. The importance of this Arabic language for non-Muslims is when they travel to the Arab region themselves. Furthermore, there are many previous scholars whose works used Arabic from various disciplines that have high quality. In learning Arabic, there are also problems outside the language itself. This can be seen from several factors or elements, namely (Ritonga, 2021) the lack of ability of an educator as an Arabic language teacher, both in pedagogic competence, professional potential, personality potential or competence. Social. And the lack of motivation from students in learning Arabic themselves or also because the background of these students do not know and understand Arabic. Furthermore, the material presented or taught is not in accordance with the needs of students, as well as the lack of facilities and infrastructure that can support the Arabic learning process.

Learning media plays a very important role in the process of learning foreign languages, especially in learning Arabic. Learning media is not only intended for children students but also for adult students. Many studies have proven the effectiveness of using instructional media in learning foreign languages, especially Arabic (Romeo, 2019). But it is very unfortunate that the use of learning media as an assistant in the Arabic learning process is not used by educators. This is because the thought of an educator is that this learning media requires a long time and costs. Therefore, educators do not want to take a lot of risks that make students bored or bored with the process of

learning Arabic. Learning media has important benefits in the learning process and the results of student learning. With a variety of learning media used in a variety of ways, both in the form of audio, visual form or a combination of the two, which of course must be in accordance with the material to be taught to students, the use of this media will foster motivation from students in the learning process so that students will avoid boredom because learning will be cool and not monotonous so that students will easily understand the material that has been taught by students. And the use of learning media is expected to have a positive influence on student learning outcomes, both cognitive results and affective results or on the psychomotor of these students.

Media can be interpreted as an introduction or intermediary, while learning is a condition in which the process of giving and receiving knowledge occurs between an educator and his students. An educator to his students. And this learning media is one of the various existing learning resources (Baniata, 2018). And among the technologies that can be used as learning media are software or software and hardware or hardware. And also, technology produces many applications that can be used as learning media that can help facilitate the learning process, especially in learning Arabic. Among these applications such as Canva Benime Respect, Audacity, YouTube, Telegram, WhatsApp King Master, and other applications that can support the process. Learning so that it can run creatively and also make it easier for educators and students.

The technology used as a medium for learning Arabic, whether in terms of goods or applications created from the technology itself, has many advantages that can support learning Arabic. There are several applications created from technology that have a lot of benefits to support Arabic learning (Su, 2021), including the first fun easy learn with this application learning Arabic will feel more practical in this application students can learn to write, learn to speak or learn to read in Arabic in order to hone skills and knowledge in Arabic. In this application, there is a lot of Arabic vocabulary and 100 topics that students can learn from this application. The second is the learn Arabic application for beginners. This application is very easy to use, and students can use this application to learn how to read commas, how write and how to speak in Arabic easily. This application is suitable for beginners who learn Arabic from scratch in the application. In this application, there is a lot of vocabulary ranging from ordinary vocabulary to difficult vocabulary, and in this application, there is also a tool used to translate Arabic. The third is the Duolingo application. This application is an application for learning foreign languages, including learning Arabic. This is because the Duolingo application uses A learning approach that is simple and quickly digested by students who use this application. This application is also recommended for novice students who are just learning Arabic. This application focuses on learning the terms moro and land comma pronunciation in both audio and game form, which is aimed at remembering learning. The next application is alifbee which is an Arabic learning application that has a lot of material about learning Arabic that students can learn every day. The material in this application is divided into more than 100 sessions and about ten stages or levels in different learning, right in this application as well. Provides the

Arabic language that students can follow, so they don't get bored when learning Arabic. The next application is a complete Arabic conversation. This application has material about conversations in Arabic that students can use as teaching material for conversational themes or the war in this application. There are so many or varied so that it is suitable for students who are still early in learning Arabic (Jing, 2020).

The existence of technology in era 5.0 has many benefits in encouraging development and progress, especially in development and progress in the world of education, especially in learning Arabic (Nastiti & Ni'mal'Abdu, 2020). The use of technology in the 5.0 era has become a tool to help facilitate the learning process, especially in learning Arabic. With the development of the times, all things certainly cannot be separated from technology, including learning Arabic. Arabic is often interpreted as a lesson that has a level of difficulty, boring, monotonous and many more similar thoughts, with the use of technology, more or less These thoughts will certainly be dismissed because if we look at the function of technology, it is to make it easier for someone to do everything, including in the learning process, especially in learning Arabic. Moreover, because technology itself cannot be separated in today's life, even in the world of education, now the use of this technology as a medium is a must in its use (Farikah, 2019). Among the technologies that existed in the 5.0 era that could play a role as learning media to facilitate learning Arabic, namely by using laptops and projectors that could display video, images, audio and also Soft were with the use of internet networks and other digital technology models as a characteristic. from the 5.0 industrial revolution, all of which are innovations or creativity in the use of technology in helping the learning process, especially in learning Arabic. More than that, of course, the most important thing is the readiness of educators and students themselves in the use and utilization of technology that will help facilitate and create the Arabic learning process in particular.

The use of this technology certainly has many advantages that can help facilitate the world of education, especially in the Arabic language learning process, such as being able to save costs and also time, and this technology will certainly improve the quality of education itself (Safri, 2022). There are several things that an educator must pay attention to in choosing technology as a medium in the learning process, including technology as a medium that can be affordable by educators and also students and is not difficult and complicated to use, meaning that it must be easy to apply so that students do not become confused about the material. Because of the complexity of the use of technology as a learning medium, the selection of technology as this medium must look at the character of the students themselves, and if an educator has used technology as a learning medium that is in accordance with existing learning, the technology is certainly the educator and the students will get benefits, such as, the atmosphere in the learning process will be interesting and more active because of creativity in the use of technology, especially in learning Arabic, and can save time and energy because if we want to see or witness something related to the learning process, then we no longer need to go to that place, an educator will also be productive because automatically the

educator will interact more often with technology in terms of making learning media as a tool in the learning process, and with the use of this technology it will certainly improve the quality of the learning outcomes, especially Arabic language learning and another advantage with this technology is that the learning process can be done anywhere, including distance learning. With all these advantages, it can be used as an excuse that the role of technology in the 5.0 era in the world of education is very important, especially in learning Arabic, which must also keep up with the times in the learning process.

Research that is relevant to this research was also carried out by Dewi Suminar with the title of the role of technology as a learning medium in sociology subjects in 2019 for the similarities between this research and the research that the researcher did, which lies in the variable, namely the role of technology and the difference is that the research is aimed at sociology learning while the researcher is heading towards Arabic language learning.

CONCLUSION

From the explanation above, it can be concluded that the use of technology in the 5.0 era really has a role in facilitating the learning process, especially in learning Arabic, because Arabic is often categorized as a lesson that is considered difficult to understand and in the learning process, it is often considered boring because of the rigidity of the Arabic learning process. The technology that follows the times will make it easier for educators and students and will also attract students' interest in carrying out the learning process, especially in learning Arabic. And among the technologies in the 5.0 era that can be used to help the learning process, especially in learning Arabic, are like a laptop which has many applications that can help in the Arabic learning process and can also use a projector to be more helpful as a medium in displaying teaching materials that have been taught. Made that way.

REFERENCES

- Abdullah, A. (2019). CyberSecurity: A Review of Internet of Things (IoT) Security Issues, Challenges and Techniques. *2nd International Conference on Computer Applications and Information Security, ICCAIS 2019*, Query date: 2022-06-26 07:34:33. <https://doi.org/10.1109/CAIS.2019.8769560>
- Abdullah, MS (2017). A practical and interactive web-based software for online Qur'anic Arabic learning. *Proceedings - 6th International Conference on Information and Communication Technology for the Muslim World, ICT4M 2016*, Query date: 2022-06-26 08:28:40, 76–81. <https://doi.org/10.1109/ICT4M.2016.25>
- Adir, O. (2020). Integrating Artificial Intelligence and Nanotechnology for Precision Cancer Medicine. *Advanced Materials*, 32 (13). <https://doi.org/10.1002/adma.201901989>
- Ahmed, MA (2019). The classification of the modern Arabic poetry using machine learning. *Telkomnika (Telecommunication Computing Electronics and Control)*, 17 (5), 2667–2674. <https://doi.org/10.12928/TELKOMNIKA.v17i5.12646>

- Alharbi, A. (2021). Arabic Sentiment Analysis Using Deep Learning and Ensemble Methods. *Arabian Journal for Science and Engineering*, 46 (9), 8913–8923. <https://doi.org/10.1007/s13369-021-05475-0>
- Alkhatlan, A. (2020). Attention-Based Sequence Learning Model for Arabic Diacritic Restoration. *Proceedings - 2020 6th Conference on Data Science and Machine Learning Applications, CDMA 2020*, Query date: 2022-06-26 08:28:40, 7–12. <https://doi.org/10.1109/CDMA47397.2020.00007>
- Alqurashi, T. (2022). Stance Analysis of Distance Education in the Kingdom of Saudi Arabia during the COVID-19 Pandemic Using Arabic Twitter Data. *Sensors*, 22 (3). <https://doi.org/10.3390/s22031006>
- Al-Yahya, M. (2019). A comparative study of machine learning methods for genre identification of classical Arabic text. *Computers, Materials and Continua*, 60 (2), 421–433. <https://doi.org/10.32604/cmc.2019.06209>
- Alzubaidi, AH (2022). A descriptive study on dietary pattern and biophysical profile among Saudi female dental students. *International Journal of Adolescent Medicine and Health*, 34 (2), 87–95. <https://doi.org/10.1515/ijamh-2019-0255>
- Audina, NA, & Muassomah, M. (2020). Instagram: Alternative Media in the Development of Maharah Al-Kitabah. *Al-Ta'rib: Scientific Journal of Arabic Language Education Study Program IAIN Palangka Raya*, 8 (1), 77–90.
- Awadallah, S. (2019). An internet of things (IoT) application on volcano monitoring. *Sensors (Switzerland)*, 19 (21). <https://doi.org/10.3390/s19214651>
- Baniata, LH (2018). A Neural Machine Translation Model for Arabic Dialects That Utilizes Multitask Learning (MTL). *Computational Intelligence and Neuroscience*, 2018 (Query date: 2022-06-26 08:28:40). <https://doi.org/10.1155/2018/7534712>
- Benmamoun, E. (2018). Is learning a standard variety similar to learning a new language?: Evidence from heritage speakers of Arabic. *Studies in Second Language Acquisition*, 40 (1), 31–61. <https://doi.org/10.1017/S0272263116000383>
- Borger, TN (2022). A Descriptive Study of Cervical Cancer Survivors' Persistent Smoking Behavior and Perceived Barriers to Quitting. *Psychology of Addictive Behaviors*, 36 (1), 109–116. <https://doi.org/10.1037/adb0000692>
- Can, YS (2020). Automatic CNN-based Arabic numeral spotting and handwritten digit recognition by using deep transfer learning in ottoman population registers. *Applied Sciences (Switzerland)*, 10 (16). <https://doi.org/10.3390/APP10165430>
- Chettri, L. (2020). A Comprehensive Survey on Internet of Things (IoT) Toward 5G Wireless Systems. *IEEE Internet of Things Journal*, 7 (1), 16–32. <https://doi.org/10.1109/JIOT.2019.2948888>
- Correction to references (Research and Practice in Technology Enhanced Learning, (2020), 15, 1, (5), 10.1186/s41039-020-0125-0). (2021). *Research and Practice in Technology Enhanced Learning*, 16 (1). <https://doi.org/10.1186/s41039-021-00154-y>
- El-Affendi, MA (2021). A Novel Deep Learning-Based Multilevel Parallel Attention Neural (MPAN) Model for Multidomain Arabic Sentiment Analysis. *IEEE Access*, 9 (Query date: 2022-06-26 08:28:40), 7508–7518. <https://doi.org/10.1109/ACCESS.2021.3049626>

- Elarnaoty, M. (2018). Machine learning implementations in Arabic text classification. *Studies in Computational Intelligence*, 740 (Query date: 2022-06-26 08:28:40), 295–324. https://doi.org/10.1007/978-3-319-67056-0_15
- Farikah. (2019). The Integration of Innovation in Education Technology to Improve the Quality of Website Learning in Industrial Revolution Era 4.0 Using Waterfall Method. *Journal of Physics: Conference Series*, 1364 (1). <https://doi.org/10.1088/1742-6596/1364/1/012045>
- Fiske, A. (2019). Your robot therapist will see you now: Ethical implications of embodied artificial intelligence in psychiatry, psychology, and psychotherapy. *Journal of Medical Internet Research*, 21 (5). <https://doi.org/10.2196/13216>
- Guzman, AL (2020). Artificial intelligence and communication: A Human-Machine Communication research agenda. *New Media and Society*, 22 (1), 70–86. <https://doi.org/10.1177/1461444819858691>
- Habib, M. (2021). A Predictive Text System for Medical Recommendations in Telemedicine: A Deep Learning Approach in the Arabic Context. *IEEE Access*, 9 (Query date: 2022-06-26 08:28:40), 85690–85708. <https://doi.org/10.1109/ACCESS.2021.3087593>
- Hsu, Y., Lin, H., & Yang, B. (2017). Research and practice in technology enhanced learning. *Springer Open*, 12 (2), 1–14.
- Ievgeniia, M. (2022). Intellectual Capital as a Factor Forming Economic Security of Enterprises in Society 5.0. *WSEAS Transactions on Business and Economics*, 19 (Query date: 2022-06-26 07:59:37), 269–277. <https://doi.org/10.37394/23207.2022.19.25>
- Ilmiani, AM, Ahmadi, A., Rahman, NF, & Rahmah, Y. (2020). Interactive multimedia to overcome the problems of learning Arabic. *Al-Ta'rib Scientific Journal of Arabic Language Education Study Program*, 8 (1), 17–32.
- Ismail, R. (2018). Sentiment Analysis for Arabic Dialect Using Supervised Learning. *2018 International Conference on Computer, Control, Electrical, and Electronics Engineering, ICCCEE 2018*, Query date: 2022-06-26 08:28:40. <https://doi.org/10.1109/ICCCEE.2018.8515862>
- Jindal, V. (2017). A deep learning approach for Arabic caption generation using roots-words. *31st AAAI Conference on Artificial Intelligence, AAAI 2017*, Query date: 2022-06-26 08:28:40, 4941–4942.
- Jing, L. (2020). What motivates L3 learners' investment and/or divestment in Arabic? Understanding learning motivation in terms of "identity." *Circulo de Linguistica Aplicada a La Comunicacion*, 84 (Query date: 2022-06-26 08:28:40), 27–39. <https://doi.org/10.5209/CLAC.71993>
- Right, T. (2019). A review of natural language processing and machine learning tools used to analyze Arabic social media. *2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology, JEEIT 2019 - Proceedings*, Query date: 2022-06-26 08:28:40, 622–628. <https://doi.org/10.1109/JEEIT.2019.8717369>
- Khayyat, M. (2020). A deep learning based prediction of arabic manuscripts handwriting style. *International Arab Journal of Information Technology*, 17 (5), 702–712. <https://doi.org/10.34028/iajit/17/5/3>
- Lin, W. (2021). Automated infrastructure: COVID-19 and the shifting geographies of supply chain capitalism. *Progress in Human Geography*, 03091325211038718.

- Linur, R., & Mubarak, MR (2020). Facebook as an Alternative Media for Maharah Kitabah Development. *Naskhi Journal: Journal of Arabic Studies and Education*, 2 (1), 8–18.
- Madi, N. (2018). A Proposed Arabic Grammatical Error Detection Tool Based on Deep Learning. *Procedia Computer Science*, 142 (Query date: 2022-06-26 08:28:40), 352–355. <https://doi.org/10.1016/j.procs.2018.10.482>
- Majir, A., & Nasar, I. (2021). Influence Of E-Commerce Industry 4.0 And Readiness To Welcome To The Society Revolution 5.0. *Sebatik*, 25 (2), 530–536.
- Marie-Sainte, SL (2019). Arabic natural language processing and machine learning-based systems. *IEEE Access*, 7 (Query date: 2022-06-26 08:28:40), 7011–7020. <https://doi.org/10.1109/ACCESS.2018.2890076>
- Muhammad, DH (2021). *The Development of Class Management Based on Islamic Suggestopedia at Pondok Boarding Responsibilities in Lampung Province*.
- Nadarzynski, T. (2019). Acceptability of artificial intelligence (AI)-led chatbot services in healthcare: A mixed-methods study. *Digital Health*, 5 (Query date: 2022-06-26 07:43:33). <https://doi.org/10.1177/2055207619871808>
- Narvaez Rojas, C., Alomia Peñafiel, GA, Loaiza Buitrago, DF, & Tavera Romero, CA (2021). Society 5.0: A Japanese concept for a superintelligent society. *Sustainability*, 13 (12), 6567.
- Nastiti, FE, & Ni'mal'Abdu, AR (2020). Readiness of Indonesian education to face the era of society 5.0. *Journal of the Study of Educational Technology*, 5 (1), 61–66.
- Ozyhar, T. (2021). Correction to: Mineral-based composition with deliquescent salt as flame retardant for melamine–urea–formaldehyde (MUF)-bonded wood composites (Wood Science and Technology, (2021), 55, 1, (5-32), 10.1007/s00226-020-01230-0). *Wood Science and Technology*, 55 (5), 1529–1530. <https://doi.org/10.1007/s00226-021-01296-4>
- Partel, V. (2019). Development and evaluation of low-cost and smart technology for precision weed management utilizing artificial intelligence. *Computers and Electronics in Agriculture*, 157 (Query date: 2022-06-26 07:43:33), 339–350. <https://doi.org/10.1016/j.compag.2018.12.048>
- Pham, QV (2020). Artificial Intelligence (AI) and Big Data for Coronavirus (COVID-19) Pandemic: A Survey on the State-of-the-Arts. *IEEE Access*, 8 (Query date: 2022-06-26 07:43:33), 130820–130839. <https://doi.org/10.1109/ACCESS.2020.3009328>
- Raisch, S. (2021). Artificial intelligence and management: The automation–augmentation paradox. *Academy of Management Review*, 46 (1), 192–210. <https://doi.org/10.5465/AMR.2018.0072>
- Ritonga, M. (2021). Arabic language learning reconstruction as a response to strengthen Al-Islam studies at higher education. *International Journal of Evaluation and Research in Education*, 10 (1), 355–363. <https://doi.org/10.11591/ijere.v10i1.20747>
- Romeo, S. (2019). Language processing and learning models for community question answering in Arabic. *Information Processing and Management*, 56 (2), 274–290. <https://doi.org/10.1016/j.ipm.2017.07.003>
- Safri, NM (2022). Issues and challenges of technology-enhanced learning during the Covid-19 era: A case study. *World Transactions on Engineering and Technology Education*, 20 (2), 89–94.

- Sari, PK (2019). A Need Analysis of Innovation in Educational Technology to Increase the Quality of Website Learning in Industrial Revolution Era 4.0 Using Waterfall Method. *Journal of Physics: Conference Series*, 1364 (1). <https://doi.org/10.1088/1742-6596/1364/1/012021>
- Su, Z. (2021). The intervention of internet technology on students' english learning in the intelligent era. *ACM International Conference Proceeding Series*, Query date: 2022-06-26 08:18:07, 775–780. <https://doi.org/10.1145/3482632.3483015>
- Sugiono, S. (2020). Digital Content Industry in Society 5.0 Perspective (Digital Content Industry in Society 5.0 Perspective). *JOURNAL OF IPTEKKOM (Journal of Science & Information Technology)*, 22 (2), 175–191.
- Sundus, K. (2019). A Deep learning approach for Arabic text classification. *2019 2nd International Conference on New Trends in Computing Sciences, ICTCS 2019 - Proceedings*, Query date: 2022-06-26 08:28:40. <https://doi.org/10.1109/ICTCS.2019.8923083>
- Talaviya, T. (2020). Implementation of artificial intelligence in agriculture for optimization of irrigation and application of pesticides and herbicides. *Artificial Intelligence in Agriculture*, 4 (Query date: 2022-06-26 07:43:33), 58–73. <https://doi.org/10.1016/j.aiia.2020.04.002>
- Tikhmarine, Y. (2020). Improving artificial intelligence models accuracy for monthly streamflow forecasting using gray Wolf optimization (GWO) algorithm. *Journal of Hydrology*, 582 (Query date: 2022-06-26 07:43:33). <https://doi.org/10.1016/j.jhydrol.2019.124435>
- Ting, DSW (2019). Artificial intelligence and deep learning in ophthalmology. *British Journal of Ophthalmology*, 103 (2), 167–175. <https://doi.org/10.1136/bjophthalmol-2018-313173>
- Wahba, KM (2017). Materials development in Arabic language learning and teaching: Realities, needs, and future directions. *Handbook for Arabic Language Teaching Professionals in the 21st Century*, 2 (Query date: 2022-06-26 08:28:40), 232–252. <https://doi.org/10.4324/9781315676111>
- Wang, X. (2021). Retraction Note: Research on tool change time and the dynamic reliability of the machining process based on sensitivity analysis (The International Journal of Advanced Manufacturing Technology, (2017), 89, 5-8, (1535-1544), 10.1007/s00170-016 -9177-0). *International Journal of Advanced Manufacturing Technology*, 115 (9), 3363–3363. <https://doi.org/10.1007/s00170-021-07435-2>
- Wijewickrema, M. (2022). A bibliometric study on library and information science and information systems literature during 2010–2019. *Library Hi Tech*, Query date: 2022-06-26 23:47:36 . <https://doi.org/10.1108/LHT-06-2021-0198>
- Wirtz, BW (2019). Artificial Intelligence and the Public Sector—Applications and Challenges. *International Journal of Public Administration*, 42 (7), 596–615. <https://doi.org/10.1080/01900692.2018.1498103>
- Wu, F. (2019). An internet-of-things (IoT) network system for connected safety and health monitoring applications. *Sensors (Switzerland)*, 19 (1). <https://doi.org/10.3390/s19010021>
- Yang, KC (2019). Arming the public with artificial intelligence to counter social bots. *Human Behavior and Emerging Technologies*, 1 (1), 48–61. <https://doi.org/10.1002/hbe2.115>

Zahidi, Y. (2021). A powerful comparison of deep learning frameworks for Arabic sentiment analysis. *International Journal of Electrical and Computer Engineering*, 11 (1), 745–752. <https://doi.org/10.11591/ijece.v11i1.pp745-752>

Copyright Holder :

© Masahiko Keshav, et.al. (2022).

First Publication Right :

© Journal International of Lingua and Technology

This article is under:

