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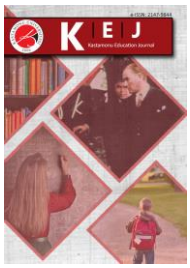

| Research Article / Araştırma Makalesi |

The Evolution of Theories, Transformations, and Emerging Trends in Distance Education Worldwide: A Comprehensive Research Article

Küresel Bağlamda Uzaktan Eğitim Teorilerinin, Dönüşümlerinin ve Ortaya Çıkan Yeni Eğilimlerin Gelişimi: Kapsamlı Bir Araştırma Makalesi

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1.Uzaktan Eğitim
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Abstract

Purpose: The fundamental objective of the current comprehensible research article is to dwell on the developmental and historical process, theoretical approaches and foundations, along with technological improvements of newly emerging trends in distance education. Furthermore, the study puts a great deal of emphasis on the most significant psychological theories such as behaviorism, cognitivism, and constructivism and in what ways they can contribute to the effectiveness of distance education platforms. The study also explores the theoretical foundations such as systems theory, communication theory and media theory along with a focus on connectivism to comprehend distance education with a careful assessment on the integration of the emerging technological advancements such as artificial intelligence, virtual reality, and augmented reality by revealing their transformative impacts and the potential on distance education. Henceforth, to accomplish such an aim, the current article provides a comprehensive analysis of distance education and offers a collection of insights into distance education for teachers, policymakers and other researchers in the relevant field.

Design/Methodology/Approach: The current article employs a literature review as a research method to assess and evaluate the essential existing research body and to obtain definitive, evidence-based, practical, compelling and persuasive data within the relevant field of distance education from a constructivist perspective to find a clear answer to the research questions.

Findings: The current study accentuates and finds that the improvements in technology, particularly, the Internet and fiber optics, have a transformative impact on distance education by improving interactivity and accessibility. Distance education seems to have evolved from corresponding with letters to sophisticated online platforms, enhancing global accessibility and overcoming challenges and obstacles. Psychological theories such as behaviorism, cognitivism, and constructivism are of high importance in optimizing learning experiences in this technological era.

Highlights: The study highlights that the emerging trends in technology, comprising virtual reality (VR), augmented reality (AR), and artificial intelligence (AI), have a profound transformative effect on distance education by improving interactivity, visualization, and individualized learning experiences. VR and AR offer immersive, 3D settings that enhance involvement, engagement and understanding, whereas AI grands individualized learning and assessments, reshaping traditional educational methods and enhancing access to effective and productive learning opportunities.

Öz

Çalışmanın amacı: Bu kapsamlı araştırma makalesinin amacı uzaktan eğitim kavramının gelişimsel ve tarihsel sürecini teknolojik gelişmelerle birlikte ortaya çıkan popular eğilimlere odaklanarak sunmakla birlikte davranışçı, bilişselcilik ve yapılandırmacılık gibi önemli psikolojik teorilere vurgu yaparak bu teorilerin uzaktan eğitim platformlarının verimliliğine nasıl katkı sağlayacağı ve nasıl kullanılacağı üzerinde durmaktadır. Ayrıca makale çalışması sistemler teorisi, iletişim teorisi ve medya teorisi gibi teorik temeller ile öğrenmede bağlantıcılık teorisiyle birlikte yapay zekâ, sanal gerçeklik ve artırılmış gerçeklik gibi ortaya çıkan teknolojik gelişmelerin entegrasyonuna ilişkin bir analiz yapıp bu gelişmelerin uzaktan eğitim ortamları üzerindeki dönüştürücü ve destekleyici etkisini ortaya koymaya çalışmıştır. Bu amaç doğrultusunda, bu araştırma makalesi uzaktan eğitimin tarihsel boyutu üzerinde kapsamlı bir analiz sunmakla birlikte öğretmenlere, politika oluşturuculara ve ilgili alandaki diğer araştırmacılar için uzaktan eğitime dair öneriler sağlamayı amaçlamaktadır.

Materyal ve Yöntem: Çalışma veri toplama ve analizi için literatür taramasını araştırma yöntemi olarak uygulamıştır.

Bulgular: Mevcut çalışma, özellikle İnternet ve fiber optik olmak üzere teknolojideki gelişmelerin, etkileşimi ve erişilebilirliği iyileştirerek uzaktan eğitim üzerinde dönüştürücü bir etkiye sahip olduğunu vurgulamaktadır. Uzaktan eğitim, mektuplarla yazışmaktan gelişmiş çevrimiçi platformlara evrilerek küresel erişilebilirliği artırmış ve engelleri aşmıştır. Davranışçılık, bilişselcilik ve yapılandırmacılık gibi psikolojik teoriler, bu teknolojik çağda öğrenme deneyimlerini optimize etmede büyük önem taşımaktadır.

Önemli Vurgular: Çalışma, sanal gerçeklik (VR), artırılmış gerçeklik (AR) ve yapay zekayı (AI) içeren teknolojideki ortaya çıkan eğilimlerin, etkileşimi, görselleştirmeyi ve kişiselleştirmiş öğrenme deneyimlerini iyileştirerek uzaktan eğitim üzerinde derin bir dönüştürücü etkiye sahip olduğunu vurgulamaktadır. VR ve AR, katılımı, etkileşimi, AI, geleneksel eğitim yöntemlerini yeniden şekillendirerek etkili ve üretken öğrenme fırsatlarına erişimi geliştirerek kişiselleştirilmiş öğrenme ve değerlendirmelerini teşvik eder.

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INTRODUCTION

In today's world, humanity faces unprecedented demands in meeting its myriad needs, necessitating a departure from traditional educational approaches ill-suited to contemporary developments and requirements. The swift emergence of information and communication technologies is claimed to have fundamentally reshaped our work dynamics, facilitating learning even while on the move. Indeed, these technological advancements have exerted a profound influence across various facets of societal existence, notably within the realm of education (Akpınar, 2003). Currently, there exists a concerted endeavour to integrate communication technologies into educational frameworks. This is primarily due to their capacity to optimize the efficient deployment of educational resources, impart flexibility to learning environments, and enhance the overall quality of education. In this context, emphasis is notably placed on distance education, a mode of learning where learners and educators are geographically separated, inhabiting different physical locations, and instruction is delivered utilizing diverse technologies (Bruder, 1989). Distance education is bifurcated into asynchronous and synchronous learning modalities (Nasrullah, 2014). Asynchronous distance education hinges on interactions between teachers and students at varied times, encompassing activities such as learning from printed directives, listening to recorded lectures, or viewing pre-recorded visual tutorials at flexible intervals. Conversely, synchronous learning necessitates real-time engagements, including activities like listening to live radio broadcasts or participating in live online classes (Shahabadi, 2015). Naturally, asynchronous distance learning predates its synchronous counterpart, owing to recent advancements in communication technologies enabling the latter's feasibility (Mayadas, 1997). Both methods have garnered popularity with the selection of appropriate teaching methods contingent upon the knowledge that learners aim to acquire. Occasionally, a blend of synchronous and asynchronous teaching approaches is employed. Modern distance education leverages computers and the internet as principal distribution channels, with a substantial majority of course content—typically 80%—delivered online (Allen, 2011).

As commonly acknowledged, until recently, individuals were obliged to physically attend classes and successfully pass entrance examinations to pursue studies in a specific field. However, the advent of online registration has drastically simplified this process, requiring merely a few minutes, enabling individuals from across the globe to participate in remote classes from the comfort of their homes. Olivier (2014) asserts that this mode of education is now not only more cost-effective but also accessible to a broader demographic, transcending barriers such as familial or health-related obligations. Technical participation necessitates only a computer/tablet and internet connectivity. Presently, online courses cater to a diverse audience interested in acquiring new knowledge and comprehending novel concepts. These courses cater to both novices and advanced learners, encompassing a spectrum of subjects from foundational physics to quantum chromodynamics, all readily accessible online.

In contrast to the previous norms, contemporary online education no longer mandates the use of a stationary desktop computer. Educational content can now be accessed via a tablet (Armstrong, 2020), smartphone (Mayadas, 1997), laptop (Stotz, 2018), or virtual reality (VR) headset, facilitating engagement with educational materials across diverse electronic platforms. This adaptability empowers students to acquire knowledge and foster understanding. Globally, innovative solutions are being integrated into this educational framework. Presently, students possess the flexibility to check and respond to emails at their convenience, utilizing a computer, smartphone, tablet, or other electronic devices. Instructional materials are now disseminated at reduced costs and with greater efficiency than ever before, rendering distance education more viable and accessible in numerous contexts.

Distance education is extensively employed today across nations such as the United States, Canada, Australia, Russia, India, various African countries, and throughout Europe and Eastern Europe, including the United Kingdom, Germany, Turkey, Sweden, and the Netherlands. Countries like Poland, Hungary, and Romania have engaged in its practice for over a century. The roots of distance education can be traced back approximately 150 years (Deniz, 2024).

Having been established many years ago, distance education is known to have undergone a notable evolution, particularly in the 1980s. This transformative period witnessed the emergence of numerous distance education providers, significantly expanding educational access, accommodating diverse learning needs and preferences, and fostering the adoption of modern pedagogical approaches. These advancements were driven not only by escalating educational demands that traditional methods could not satisfy, but also by advancements across various domains, notably communication technologies. For instance, progress in television and computer technologies facilitated the implementation of distance education methodologies distinct from conventional teaching practices. Scholarly research and practical applications in the field suggest that developments in distance education will continue to accelerate. The widespread proliferation of the internet and the increasing prominence of online educational activities and applications further substantiate this trajectory (Akpınar, 2003). In this context, the primary aim of the present study is to explore distance education through a comprehensive literature review. Considering the reasons lying behind this research study, the fundamental objective of the subjects discussed and covered in this research article is to seek for a clear answer to the following questions.

1. What are the fundamental theories leading to transformations considering the increasingly emerging new trends in technology for the distance education settings?
2. What can be done to better utilize these newly emerging technological trends together with the theories leading changes in distance education?

PURPOSE OF THE STUDY

The objective of this very current comprehensive research article is to delineate the evolution of distance education worldwide. Through a systematic literature review, the historical development of distance education across different years has been assessed and evaluated. The literature review entails searching, locating, scrutinizing, and synthesizing previously published works such as books, articles, theses, conference papers, historical records, and reports related to the research topic (Webster & Watson, 2002). The aim of the literature review, in essence, is to acquire essential information pertinent to the research subject. A great number of pivotal studies in the development of distance education over the years have been carried out. Examining the historical evolution of the subject matter is regarded as useful for predicting the future technological and instructional advancements and prospects in this field of education. In other words, in order to gather and evaluate data, and shed light on the changes coupled with the developmental process of new theories, which can increase the effectiveness of distance education, newly emerging technological trends with a focus on the transformative impact of distance education, this research article employs a review of the literature as a research method.

REVIEW OF LITERATURE

When scrutinizing the historical evolution and emergence of distance education, it becomes apparent that its origins can be traced back to the 1700s, with early practices cantered on written correspondence. A pivotal moment occurred on March 20, 1728, when the Boston Newspaper announced the commencement of "Steno Lessons" through distance education. By 1833, structured educational delivery via correspondence was formally established (Çoban, 2013).

Isaac Pitman is acknowledged for pioneering distance education through correspondence in England around 1840, where he provided Bible education to students via written communication. Pitman also introduced a system for evaluating students' work and assigning grades based on their achievements. The United States adopted England's correspondence-based distance education model and established the University of Correspondence Education in 1883, although its operation was brief (Nizam, 2004).

Germany emerged as a pioneer in distance education, establishing its foundations in 1856 with institutions such as "Tele Colleg," "Schulfernsehen," "Fern Universitat," and "Deutsch Institut Fur Fernstudien," which remain operational today. France made substantial investments in distance education, commencing studies in 1907 and formally establishing the Distance Education Centre in 1939. Likewise, Russia developed numerous projects and applications for distance education during this era, introducing them to the public (Antalyalı, 2004).

In France during the 1930s, several private institutions pioneered the introduction of correspondence distance education services, later receiving state support. In 1940, the National Tele Education Centre (CNTE) was renamed the National Distance Education Centre (CNED), persisting in its educational mission, particularly during wartime. The inception of distance education garnered significant interest from both students and the public, with notable enrolment figures: 1,413 individuals between 1944 and 1945, rising to 73,000 in 1963, and further to 158,000 by 1971, as documented by Edanich (cited in Papi & Büyükaslan, 2007). The introduction of audiovisual technologies in France from the 1970s accelerated the adoption of distance education, initially through satellite and subsequently through cable broadcasting. The 1980s marked a period of substantial advancements in information and communication technologies, profoundly influencing distance education. Educational services began to utilize mediums such as CD-ROMs, the internet, and computer technologies.

The swift development of mass media profoundly reshaped the framework of distance education practices. With the inception of radio broadcasting in the United States during the 1920s, universities established their own radio stations, expanding access to educational services on a mass scale. Educational radio programs debuted in 1923, with a network spanning over 500 radio stations exclusively dedicated to educational content. By the 1930s, radio dissemination had grown worldwide, gaining significant momentum in educational circles. These broadcasts reached nearly one million students, solidifying radio as a preferred medium for distance education. Despite initial challenges in achieving widespread adoption by 1945, primarily due to the costs associated with radio broadcasting technology and limited access to receivers, the post-war era witnessed a surge in educational programming tailored for children, thereby enhancing the efficacy of distance education via radio (Çoban, 2013).

Japan has also emerged as a proponent of distance education. In 1948, under the Education Law, Japan initiated distance education practices to accommodate soldiers and individuals unable to attend traditional schooling. This initiative aimed to ensure educational opportunities across secondary, high school, and higher education levels. Japan's approach to distance education closely mirrors that of the UK. In contrast, Canada has pursued a comprehensive distance education service inspired by the United States. With its extensive history in distance education, Canada serves as a global exemplar in this domain (Antalyalı, 2004).

Substantial strides have been made in the domain of distance education, spanning not only developed nations but also developing and underdeveloped regions. The University of the Cape of Good Hope, founded in 1873 in South Africa, pioneered a range of distance education initiatives. Similarly, under the stewardship of Hang Hermod, Sweden introduced a secondary school offering correspondence education. In 1910, Australia established its inaugural distance education institution to cater to higher education needs, thereby democratizing educational access nationwide. The global significance of distance education has garnered international backing from countries such as Italy, Canada, India, Poland, Israel, and Spain, catalysing diverse project developments and gradual implementations.

The swift emergence of mass media channels, consisting of radio and television, seems to have facilitated their integration into distance education effectively. Spain's establishment of the National Distance Education University in 1972 exemplified efforts to broaden educational opportunities across society. Concurrently, developed European nations laid the foundation for contemporary distance education systems, with England inaugurating the National College in 1974 and Germany establishing the Hagen Open Education University. In the 1980s, Thailand's STOU, a state-established university, pioneered various programs to cater to students unable to pursue university education due to diverse constraints. STOU conferred master's, bachelor's, and certificate degrees to participants in courses or training programs. The Netherlands established the Dutch Open University in 1984, adopting a similar structural model to STOU. By 1989, India had developed an extensive project focused on distance education, resulting in the launch of the National Open School, gaining nationwide attention. In a parallel effort, New Zealand initiated the Correspondence School in the early 1990s (Uşun, 2006).

Distance education has also been utilized for foreign language instruction. In the 1980s, England introduced the National British Program, utilizing radio and television broadcasts to teach French. Students accessed the program via these mediums, with a supplementary question-answer service available via telephone, facilitating limited interaction between students and instructors. Canada undertook a similar initiative in Manitabo and Ontario, employing telephone-based instruction for language learning among individuals unable to participate in formal education. Study materials such as journals and audio cassettes were provided, complemented by telephone consultations with instructors at specific intervals to practice verbal skills over the phone. In the 1990s, North Carolina State University (NCSU) in the United States launched the "Japanese Language Program with Television," utilizing cable broadcasting and Fiber optic technology to enrich the learning experience with visual elements. This program facilitated scheduled interactions between instructors and students, allowing feedback on course content. Significant advancements were also made in distance education at the University of South Africa, which introduced the "Teaching Mandarin Chinese through Distance Education Program." Students received comprehensive study guides comprising audio tapes, instructor correspondence, assignments, slide presentations, and teleconference services for additional support. Similarly, Israel's Open University enabled the study of secondary foreign languages through distance education initiatives (Adıyaman, 2002).

In Turkey, the origins of distance education trace back to 1927, driven by the physical limitations of traditional educational institutions. Over the years, this approach has been widely integrated across primary, secondary, high school, and higher education levels. A significant meeting convened on June 2, 1927, involving key figures in Turkish education such as the Minister of National Education, the Undersecretary, and Education Chiefs, among others. During this assembly, the deficiencies within the Turkish education system were deliberated, leading to a consensus on the potential of correspondence education as a viable solution (Arar, 1999).

Following the adoption of the Latin Alphabet in 1928, substantial efforts were directed towards enhancing literacy rates. In the 1950s, both the Ministry of National Education and private entities actively promoted vocational training and distance education in foreign languages, increasing investment in these initiatives. Consequently, distance education programs were launched at the Banking and Commercial Law Research Institute, affiliated with Ankara University's Faculty of Law. These initiatives facilitated professional development for bank officials and realized the idea of distance education proposed in 1927. Similarly, the establishment of the Instructional Films Centre (ÖFM) in 1951 marked an increased utilization of distance education methods (Papi & Büyükaslan, 2007).

In the late 1950s and early 1960s, the Ministry of National Education in Turkey began to acknowledge the educational contributions of correspondence education. Collaborating with the Undersecretariat for Vocational and Technical Education, initiatives were launched to deliver various technical subjects through correspondence channels. Subsequently, the Correspondence Centre was established within the Directorate of Statistics Publications. Despite offering a somewhat one-dimensional and limited educational experience, the Correspondence Centre underscored Turkey's commitment to distance education, significantly enhancing student education and expanding the scope of distance education initiatives in the country. The success of the Correspondence Education Centre laid the foundation for the establishment of the Experimental Higher Teacher Training School, Open Education Faculty, Open Education High School, Open Primary Education, and the Broadcasting Higher Education Institution (YAYKUR) (Arar, 1999).

In 1968, influenced by the widespread adoption of radio and television, the Correspondence Education Centre in Turkey underwent a transformation and was renamed the Radio and Television Education Centre. Subsequently, in 1982, with the evolution of advanced educational and training technologies, the Radio and Television Education Centre evolved further into the Informatics Center (Papi & Büyükaslan, 2007). The 1980s marked a significant period of expansion for distance education in Turkey. During this time, there was a substantial renewal of technological infrastructure capable of meeting the educational needs of the population.

It is claimed that the distance education as a higher education model was firstly implemented at Eskişehir Anadolu University's Open Education Faculty. In 1982, the faculty started working officially, organising some programs in Economics and Business Administration. The introduction of the distance educational model disseminated educational opportunities nationwide and made it possible for the Turkish citizens living in regions such as the Turkish Republic of Northern Cyprus and Western Europe to receive their diplomas (Çukadar & Çelik, 2003).

In the first place, a number of approximately 29 thousand students are known to have enrolled at the Open Education Faculty established by Anadolu University, and the number of the students enrolling at the faculty has increased over time exponentially.

Between 1982 and 1993, due to a great demand for open education, thousand educators completed their associate and bachelor's degree programs within an 11-year period and received their diplomas. As a result of such a revolutionary establishment offering a great educational chance to people, Turkey witnessed an exponential rise in its educated population. Anadolu University continued to establish collaborations with state institutions, leading to the introduction of associate degree programs in fields such as "Midwifery, Nursing, and Health Technician" and "Agriculture and Veterinary." Additionally, a comprehensive health project known as "Western Europe" was initiated under a protocol signed with the Ministry of Health in 1987, providing diverse health-related training to Turkish citizens residing abroad. Following the events of September 12, 1980, computer-based systems began to be integrated into the banking sector in Turkey, aligning with the technological standards observed in developed nations. Prime Minister Turgut Özal emphasized the critical role of technology in "keeping pace with the modern world" and hinted at the future trajectory of distance education in Turkey (Papi & Büyükaslan, 2007).

During the 1990s, the proliferation of the Internet and web technologies marked a pivotal moment in advancing the landscape of distance education, particularly through online platforms. In Turkey, the initiative to integrate web-based distance education was led by the establishment of the Informatics Institute at the Middle East Technical University (METU). The purpose of this initiative was to furnish students with opportunities for self-improvement in informatics, offering pathways to acquire certificates and diplomas. Faculty members from various universities across Turkey actively participated in these programs. While some of the programs at METU involved face-to-face interactions with instructors, the predominant mode of instruction remained distance education (Akgün & Duman, 2011).

The evolution of the Informatics Centre, which commenced in the 1980s, culminated in its transformation into the General Directorate of Educational Technologies of the Ministry of National Education (EĞİTEK), marking a significant milestone in the expansion of the educated populace. Consequently, during the 1998-99 academic year in Turkey, approximately 3 thousand individuals earned diplomas. By contrast, seven years later, this figure surged to 146 thousand, reflecting a substantial growth in distance education and a noteworthy increase in the literacy rate (Papi & Büyükaslan, 2007). Furthermore, in the academic year 1992-1993, the establishment of the Open Education High School granted official recognition to students pursuing high school education. Istanbul Bilgi University also pioneered web-based distance education programs, launching an internet-based MBA (master's) program. These initiatives garnered approval during the 8th meeting of the National Informatics Committee on September 18, 2000. Istanbul Bilgi University, a private foundation university, notably led the way as the first institution to formally introduce internet-based distance education in Turkey (Akgün & Duman, 2011).

In 1997, Sakarya University placed a strategic emphasis on web-based education, culminating in a decision to transition to Internet-Supported Education starting from the 2000-2001 academic year. Since 1999, a multitude of programs have been introduced under the umbrella of distance education, spearheaded by Sakarya University's Informatics Department. The Distance Education Project, initiated by Sakarya University in 2000, offered courses conducted by instructors from Lotus-Italy. Initially, 3 web-based courses were made available to 94 students, showcasing the university's pilot project's success. In 2002-2003, the Council of Higher Education (YÖK) made a significant decision to launch distance education associate degree programs in Turkey. Both Anadolu University and Sakarya University participated in this initiative, with Sakarya University introducing associate degree programs in Information Management and Computer Programming, alongside Anadolu University's Information Management Program. Initially accommodating 500 students each, these programs experienced subsequent increases in enrolment (Bayam & Aksoy, 2002).

In the year 2000, Sakarya University implemented internet-supported distance education programs in its undergraduate curriculum after years of preparation dating back to 1997, in collaboration with IBM Türk. The Department of Informatics had been exploring the feasibility of delivering courses through e-learning since 1999. Enhancing its expertise in distance education, the university facilitated academic endeavours and supported staff members in pursuing education at Iowa State University in the United States. These developments culminated in the decision to introduce e-learning services at the higher education level. Consequently, Sakarya University adopted IBM's Lotus Learning Space platform and launched the Sakarya University Distance Education Project in 2000. Starting with a pilot program in the Faculty of Engineering, nearly 200 students began accessing three core courses—Information Technology Applications, Logic Circuits, and Computer-Aided Design—via the internet. By the spring semester of 2001, this number had increased to 1,500, including visiting students (Bayam & Aksoy, 2002).

In the 2000s, The Turkish Online Journal of Distance Education (TOJDE), the first internationally published online education journal in Turkey, was established under the editorship of Prof. Dr. Uğur Demiray. Over time, it has become a prominent academic journal in the field. In 2015, editorial responsibilities were transferred to Prof. Dr. T. Volkan Yüzer. Additionally, in the same year, Istanbul Bilgi University launched web-based distance education programs and established a YÖK (Higher Education Council)-approved e-MBA (Master of Business Administration) program. These initiatives were decided upon during the 8th meeting of the Informatics National Committee on September 18, 2000. Istanbul Bilgi University, operating as a private foundation university, thereby became the first private university in Turkey to formally initiate an internet-based distance education system (Akgün, & Duman, 2011). Presently, distance education methodologies are extensively utilized by a multitude of universities, public institutions, and private sector entities around the world. Moreover, institutions of higher education administer certificate, associate, undergraduate, and graduate programs through distance learning, employing printed materials, radio-television broadcasts, computer-assisted learning, and interactive sessions. Students benefit from online practice assessments, archived course lectures, and digital textbooks.

METHOD

This study, with the purpose of investigating the influence of distance education based on its historical developments, carries out a literature review research methodology as it is of high significance to gather conclusive, scientific, practical and compelling evidence so as to broaden knowledge within the framework of distance education with the fundamental intention of developing the research findings overall. Due to the nature of this research, the literature review as a research method is conducted to systematically collect, critically analyse, and synthesize data from the existing body of the related studies in the literature. Furthermore, it furnishes a clear and obvious evaluation, overview, and summary of the current research trends in the domain of distance education with the goal of helping the future researchers to structure credible theoretical schema and supports claims stemming from the existing scholarly work, whilst also ascertaining the rising and advancing research studies to enlighten the future studies and prospects of the domain of distance education adequately. In other words, so as to gather the essential data for this research study and to find concrete answers to the research questions aligned with its objectives, a document analysis approach was employed. As articulated by Webster and Watson (2002), document analysis entails the systematic examination of existing written materials and scholarly works. In this study, the researchers collect relevant documents, articles, and published materials to identify the newly emerging trends in technology along with the fundamental theories leading to transformation how distance education is perceived and utilised. Following this data collection, the researchers analyse the information obtained through the document analysis in relation to the research questions and offer a series of recommendations for educational institutions and educators to address the changes, new theories associated with distance education. It is also crucial to note that the researchers did not involve any human participants during the data collection and analysis phases.

PSYCHOLOGICAL FOUNDATIONS IN DISTANCE EDUCATION

Due to the swift emergence of communication and information technologies (ICT), distance education has turned out to be increasingly accessible, flexible, and crucial in education. Henceforth, it is claimed that a solid and psychologically credible and a theoretical basis are altogether fundamental components of establishing a productive, fruitful and efficient distance education platform. Theories provide a schema for understanding the concepts and boost their efficiency, advancement, and performance (Deniz, 2024). Keegan (1986) argues that theories serve a practical function. Holmberg (1985) highlights the significance of theoretical schemas with a belief that they provide insights into what could be done in distance education platforms for better learning outcomes under varying circumstances. This understanding helps us implement a set of effective methodologies. To put it into a plain example, it could be stated that in an online course in which learners' interactions are confined to lecture videos, there seems to be a little bit of consideration for distance education, asserting that providing varying opportunities to students for a better interaction reduces the perception distance in distance education learning settings.

As globally acknowledged, the primary objective of distance education is to make learning much easier and more accessible by enhancing learners' ability to perform well. Understanding the various views to how learners learn is essential for instructional designers when selecting and developing suitable instructional strategies, materials, and technological tools. There exist multiple learning theories, none of which can comprehensively explain learning in isolation or support it effectively on its own. Therefore, instructional designers often integrate these theories to inform their design processes. In this section of the review article, behaviourism, cognitivism, constructivism, and connectivism will be examined, exploring how these theories have been adapted for application in distance education. The discussion will emphasize the necessity of integrating diverse theoretical perspectives to effectively guide instructional design in this context.

Behaviourism

Behaviourism views learning as the observable alteration of behaviour in response to external stimuli present in the environment (Skinner, 1974). It centres on the stimulus-response relationship and how these associations are strengthened or weakened through reinforcement. Behaviourists meticulously analyse the learner's environment to determine the most effective timing for instruction and to identify suitable reinforcers that motivate learning. Therefore, regular practice and review sessions are employed to sustain the learner's readiness to perform (Schunk, 1991).

Criticism surrounding behaviourism in explaining learning highlights its limitations in accounting for incidental and exploratory learning processes, which are not adequately addressed by this theory. However, behaviourism offers practical implications for distance education. Instructors are advised to clearly articulate expected learning outcomes to learners, enabling them to align their focus with instructional expectations and self-assess their progress. Distance education programs should incorporate observable assessments to effectively evaluate learner outcomes, with feedback from these assessments guiding instructors and learners towards necessary adjustments. Sequencing of learning materials plays a crucial role in enhancing learning outcomes; instructors can structure materials progressively from simpler to more complex, from familiar to unfamiliar topics, and from theoretical knowledge to practical application. Needs assessments are essential in identifying gaps between current and desired learning performances, often integrating observable behavioural indicators into instructional strategies. Lastly, the inclusion of practice activities is paramount in course design for distance education, ensuring learners engage actively with the content to reinforce their understanding and skills development (Anderson, 2008).

Cognitivism

The emergence of cognitivism could be traced back to the late 1950s as a separate domain branch from behaviourism, and it focuses on how individuals process information rather than just visible and obvious behaviour, dwelling upon the intricate cognitive processes such as thinking, language, memory, motivation, and metacognition. Different from the domain of behaviourism, cognitivism lays a great deal of emphasis on someone's mental ability to process and utilize learning. Memory is claimed to play a fundamental role in cognition with the aim of assisting people as the repository in which people keep, store and recall information systematically. In the first place, the perception of information through the senses takes place in sensory memory followed by moving to working memory in which the process of information occurs with a combination of the existing knowledge utilizing the long-term memory. As the capability of working memory is confined and needs to be assisted, presenting information in a meaning order and manner through instructional framework is needed as chunks. To exemplify it for the domain of distance education, in distance education, processing information takes place with the help of educational videos as they provide sensory information help students process information and combine them with the existing knowledge in their memory structure. Chunking also assists learners by grouping the subject matters into logical, rational and meaning units. Cognitivism, furthermore, presents the idea of schemas in which mental structures are organised properly and they develop to store new information, and they impact how people experience and interpret their learning progresses. As a result, cognitivism concentrates on the internal mental processes and comprehending learning occurrences (Miller, 1956).

The practical involvement of cognitivism in distance education practice accentuates the importance of various actions stemming from the idea of promoting learning outcomes. These actions are known to present leaners proper, meaningful, and comprehensible based on learners' cognitive abilities to utilise information processing and put them into working memory. Making meaningful connections between new information with learners' previous background knowledge helps them recall information from long-term memory and develop a clear understanding of the subject matter. To have a better comprehension, chunking is utilised as it hinders cognitive overload and any excessiveness, helping learners process information in their working memory effectively and adequately. The diversity of instructional strategies adapts to different learning styles through the utilization of various sensory channels (audio and visual) to enhance information processing. For a productive and efficient learning experience, the engagement of learners' attention, building a sense of confidence, creating a source of motivation and inspiration are some of the essential components of establishing a distance education platform. What is more, associating knowledge to real-life situations through applications enhances comprehension. These approaches altogether substantiate the implementation of cognitive theory in establishing a productive, efficient and performance-boosting distance education platform where learners perform and practice easily (Anderson, 2008).

Constructivism

With the implementation of constructivism, students structure and build their knowledge with a full active participation rather than what happens in the traditional learning where students learn passively and act as passive receiver of knowledge. In constructivism, instruction assists leaners as a conductor rather than a teacher forcing students to gain knowledge. Students get involved in real life settings and make interpretations derived from the existing knowledge stored and experiences gained, resulting in varying interpretations among their peers who go through the same content. Withing the schema of distance education, one of the most fundamental and essential aspects is to prepare a varying set of materials that recognise and incorporate learners' backgrounds, cultural values, and pervious learning experiences into distance education platform efficiently. Constructivists substantiate the materials stemming from the idea of putting them into practical life settings for learners to promote their learning inputs and outcomes. Constructivism in distance education helps students be more active in constructing knowledge by themselves, hindering them from being passive receptors of the information being presented. With regard to constructivism, teachers/educators act as a conductor/facilitator rather than being in a position of forcing students to learn and gain knowledge through passive construction of knowledge. Learners are always active here and they construct knowledge by utilizing their prior knowledge to gain more learning experiences and they keep interacting and communicating with their peers and educators to develop a much better comprehension based on their personal and individual needs. Collaborative learning activities are another pivotal component of constructivism as it assists leaner with a set of varying chances to get involved in real-life settings, group work with the intention of developing their metacognitive skills. Leaners build knowledge stemming from their real-life issues, cultivating confidence, promoting interaction in learning settings that also promote and enhance their exponential thinking, help them socialize and assist them with a sense of subjective understanding and comprehension (Anderson, 2008).

THEORETICAL FRAMEWORKS IN DISTANCE EDUCATION

The theories discussed here illuminate educators, policy makers and educational institutions to get the hang of a framework for understanding the three basic and fundamental components of distance education such as systems, communication and media theories together with connectivism, which will be first explored below. Connectivism, in its essence, is regarded as a technological framework and a learning theory which lays a great emphasis on the core role of social and computed-based networks in learning settings to learn and spread knowledge. Systems theory explains how distance education functions as a system through a set of interconnected technological components. Communication theory is claimed to present insights into the mechanisms of

communication technologies, applicable to expounding communication within distance education settings. Media theory enhances the understanding of how varying media systems and theories could competently substantiate communication in distance education through the diversity of modalities.

Connectivism

The concept of connectivism comes into existence as a response to the revolutionary effects of technology on our lives and learning experiences. In contrast to the concepts of behaviourism, cognitivism, and constructivism, connectivism asserts that learning takes place due to the fact that learners interact and response to complex and non-stop-changing online settings. It also flourishes with the concept of the diversity of available sources paving the way for learners to make meaningful and consequential connections, leading them to have the ability to comprehend the relevant information and the importance of information. Connectivism feeds on the complex network of chaos, intricate theories, presenting leaners a new schema to define how learning takes place in today's ever-changing digital and online world (Siemens, 2005).

The concept of connectivism, as explicated by Siemens (2005) and detailed by Anderson (2008), is claimed to reshape distance education with its distinguishing and innovative r implications. Instructors/teachers/educators from all educational institutions are compelled and encouraged to foster participation, involvement, and commitment among learners, encouraging them to delve into and fuse the current information across diverse sources. By doing so, connectivism as an approach goes beyond the traditional learning boundaries, encouraging and promoting a dynamic learning setting. What is more, educators are believed to play a pivotal role in assisting learners with the necessary and essential skills to critically investigate and comprehend the reliability and importance of information, thereby fostering essential competencies in critical thinking along with information literacy. A great emphasis is put on the idea that peers and instructors work collaboratively through a set of varying communication technologies, urging an inclusive learning community through active participating and involvement. Learners are motivated to alter suitable communication technologies in line with their learning needs and ambitions, as also adapting to the swift improvements and developments in educational technology. These principles highlight Connectivism's revolutionary effects on instructional strategies in educational setting, paving the way for a learner-cantered approach that blends dynamic information networks and encourages continuous learning in today's developing and increasing digital landscapes in the domain of distance education.

Systems Theory

Systems theory and its implementation have long been essential for varying fields, including the domain of distance education. This theoretical schema is vital to comprehending how distance education is both formulated, developed and how it is executed. In accordance with systems theory, to maximize, enhance and promote outcomes within any organisational structures, a systematic method is needed as it plays an essential role due to the fact that it requires systematic analysis, problem-solving, and the development of systems to develop the efficiency and accomplish desired goals (Ryan, 1975). A group of varying determinants impact the vibrant implementation of distance education, which change from global attempt to local groups even learning communities. As expounded by Moore and Anderson (2003) all intricate systems are associated with larger entireties, contemplating the complex balance of the natural order and chaotic events in the whole world itself. The concept of distance education primarily and fundamentally counts on the integration and fusion of technology and instructional methods and theoretical frameworks designed for remote learning along with an interactive platform which requires an effective communication between educators and learners, going beyond traditional way of teaching and learning and student-to-student involvement and active participation in traditional classrooms. The key components comprise the varying digital media tools, comprehensive instructional production, technological infrastructure available in different countries/regions, organisational schemas of educational institutions providing distance education, learner distinguishing personality traits affecting individual learning inputs and outputs, the establishment of collaborative learning groups to enhance the implementation and multimedia tools of distance education across all levels.

Communication Theory

Communication theory comprises varying perspectives that have developed and enhanced over time to get the hang of the intricates of communication processes. Littlejohn (1989) ascertains and identifies a set of four key and essential perspectives such as transmissional, behavioural, interactional, and transactional, which provide a completely different and distinguishing angle to interpret and study communication process, by laying a great emphasis on varying points like the flow of information, behavioural responses, interactive dynamics, and mutual influence between communicators. Ultimately, all of these provide a comprehensive schema for analysing how communication operates across different environments, encompassing its applications and implementation in the domain of distance education and beyond. The concept of communication theory covers four distinctive and distinguishing aspects that offer varying angles on the very nature of how communication takes place. The first key perspective concentrates on the clear transfer of message or information from one source to another. In contrary to the first key, the transmission, the behavioural aspect brings attention to how information receivers make interpretations and respond to messages, accentuating feedback and clarity. The interactive key component regards communication as a social process with the involvement of participants to interact with one another, urging a mutual understanding in a collaborative manner. Finally, the transaction emphasis transcends interpretation, laying a strong emphasis on the active participation to share and re-produce of

the meaning among participants. These four points are claimed to empower our understanding of communication dynamics, providing us with insights into how we transmit, receive and interpret information and messages in varying settings (Richey et al., 2011).

Media Theory

Media theory plays a paramount and fundamental role in making learning experiences effective through a set of instructional media tools which consist of varying structures like sound, visuals, objects and physical movements (Richey et al., 2011). Nevertheless, the concentration goes beyond the mere existence of media and how leaners utilise these media sources and how they can learn from them properly. In the domain of distance education, the employment of the visual media like PowerPoint slides, videos along with animations is claimed to have an immense role in shaping instructional purposes and meeting learners' educational needs; however, it is advisable to bear it in one's mind that their efficiency is changeable. When establishing a distance education setting, it is of high importance for educators to select appropriate media tools and digest the effect of visuals on promoting learning inputs and outcomes meticulously. To comprehend the importance of the roles of visuals and their impacts on promoting learning processes and strategies for a better selection of effective media tools for distance education platform, Dick, Carey, and Carey (2009) posit that visual tools, including a range of simple drawings, diagrams along with complex videos and animations, are claimed to have a pivotal role in media since they appear to have developed dramatically with the help of technology. What is more, visuals have a crucial function in improving individuals' learning progress by articulating and expressing information effectively. It is also advisable for educators to ponder on a set of contextual determinants like the number and the size of the learner group, access to adequate resource, and the interactions needed once they sit down to produce and select a set of media tools for instructional purposes. Furthermore, educators and institutions must consider the cost effectiveness of media tools, storage capacities and technical support aids and possible disturbances to the learning settings along with a careful consideration to make it sure that media tools are in a complete harmony with educational purposes and to boost individuals' learning experiences for all participants so as to avoid any sort of managements issues, which may pop up suddenly.

TECHNOLOGICAL ADVANCEMENTS AND EMERGING TECHNOLOGIES IN TRANSFORMING DISTANCE EDUCATION

It is an undeniable fact that because of globalization, technological developments have gained a swift and unprecedented momentum to reshape different aspects of human life, bringing never-before-seen chances along with challenges and obstacles to developing and expanding markets. Accentuating the significance of technology literacy, preparing and designing an educational platform which includes ever-developing technological and instructional tools and integrates them into education to boost learning inputs and outcomes is of paramount importance as innovations like virtual and augmented reality, artificial intelligence together with the Internet of things are believed to have a function to transform teaching and learning contexts, boosting their reliability, validity and effectiveness. In this regard, as known, on a global scale, higher education institutions have the tendency to design their teaching and learning settings by adopting these technological advancements in order to meet both students' needs and to improve learning inputs and outcomes together. Furthermore, it is an unavoidable fact that today's students are rather familiar with the aforementioned technological developments as they believe that these technologies make their learning easier and provide them with adaptable learning experiences, moving and breaking away from traditional methods and techniques. Under such sort of an ever-evolving-developing technological world, in order to utilize the complete potential of ever-increasing-emerging technologies in education, it is highly advisable for educational institutions to allocate resources to fund, evaluate and substantiate innovative pedagogical and educational approaches.

Virtual Reality

Sun, R., Y.J., and Cai, Q. (2019) suggests that virtual reality (VR) is an avant-garde technological advancement letting users in simulated environments through computer-generated experiences. It is capable of producing real life settings along with imaginative contexts where users feel like they are in the real world that go beyond traditional physical reality. Since the origin of virtual reality, which dates back to the 1960s, virtual reality has developed at an unprecedented speed and it has improved traditional way of teaching along with traditional teaching and learning methods with an active engagement of students via real life sensorial experiences, offering them a great visualization by demonstrating processes and teaching and learning activities altogether. It is of high significance to comprehend the importance of virtual reality in educational settings as it enables both educators and students through its content and material to utilize the discovery and comprehension of both abstract and complicated conceptions within an environment where students feel safe. It also allows students to have access to computer-generated simulations, offering interactions among students through 3D settings to improve the root of learning experiences.

Augmented Reality

Tzima, Styliaras, and Bassounas (2019) argue that the emergence of augmented reality (AR) as a pivotal technological trend with an expectation to gain popularity along with the escalating availability of augmented-reality-based technological devices worldwide has been a very hotly discussion topic due to its benefits that it offers as it is believed to combine online and digital imaginary situations into real-life settings, leading its users to broaden and develop their perspective. Different from virtual reality (VR) believed to get its users involved in virtual worlds depending on the powerful computer and computer technologies,

augmented reality brings freedom and makes its users move in real life and natural settings with the capability to reveal 3D visuals, improving traditional learning through interactive applications. It also focuses on empowering comprehension by utilizing 3D visualizations of intricate objects in a realistic manner. Therefore, educational research lays a great emphasis on AR's possible potential to promote learning processes and outcomes through motivation and overall performance and potency. Speaking of the implementation of AR in distance education, it could be said that the AR-based technologies such as Internet of Things, smart watches, Google's Glass project, Microsoft's HoloLens, Facebook's Oculus Rift, bracelets, rings, necklaces, smart clothing, and tattoos are a part of wearable technologies in distance education or educations itself at all levels of education and they provide its users with a setting in which they can interact instantly between the real and virtual worlds.

Artificial Intelligence

Holmes, W., Bialik, M., and Fadel, C. (2020) assert that the capacity of computers has been enhanced unequally, offering independent learning opportunities ever before thanks to the manipulation of applications since 1950 and they argue that such kind of an unprecedented development indicates a turning point not only in computer sciences, but also in business, education, and society, meaning that computers have turned out to be so powerful that they could complete and finish new jobs without human beings, by paving the way for the existence of Artificial Intelligence. In this sense, Artificial Intelligence (AI) has the function to communicate with applications by using their mother tongue, emotions, gestures, facial expressions not only to adapt to them but also so as to learn from them to boost itself to be more productive independently. Artificial Intelligence is claimed to have a pivotal impact on different aspects of our daily lives and it has become a great force for innovations for every industry, including education because it is argued that its effect is felt everyone and it radically chances the traditional teaching and learning methods and approaches thanks to emerging technologies mentioned above by changing the way how individuals teach and learn in educational institutions. What make Artificial Intelligence so appealing in education is due to its different aspects it offers for individuals such as personalized learning, dynamic assessments, and its function to substantiate real life and meaningful interactions among individuals in online, on mobile devices, or hybrid/blended learning and teaching platforms. Many studies conclude that Artificial Intelligence, along with its robotic technological applications and devices, plays a significant role in education along with its function to address absenteeism, take on a role in leading productive conversations throughout language instruction, and even it provides learners with sentimental and emotional support by promoting creativity and furnishing them with an ability to solve problems independently.

CONCLUSION AND DISCUSSION

The current study underscores the profound and trasformative impact of advancements in information and computer technologies encompassing radio, television, the Internet, and revolutionary computer systems on distance education on a global scale. These technologies not only enrich teaching methods but also significantly enhance learning outcomes. The evolution of Internet connectivity, particularly through fiber optic and DSL technologies, has facilitated a global educational landscape, fostering interactivity between students and educators. This dynamic interaction allows for the maximization of educational engagement, reinforcing the idea that distance education has transformed from traditional correspondence methods to sophisticated online platforms that support both synchronous and asynchronous learning. Such platforms greatly increase accessibility, overcoming barriers of physical distance and economic constraints.

As highlighted in the study by focusing on finding an answer to the research questions, it is obvious that nations worldwide, including Turkey, are increasingly embracing distance education to address the challenges posed by high student populations and limitations in formal education systems. This shift signifies a commitment to lifelong learning, democratizing access to information and a wealth of online resources. The findings suggest that distance education not only enhances learning opportunities but also promotes an egalitarian approach to knowledge acquisition. The integration of psychological theories, specifically behaviourism, cognitivism, and constructivism within the framework of distance education is critical to enhancing learning experiences. Behaviourism emphasizes the importance of observable inputs and outcomes, suggesting a structured approach to evaluation (Anderson, 2008). Cognitivism shifts focus to the mental processes involved in learning, advocating for the effective processing and utilization of information (Miller, 1956). Constructivism, on the other hand, revolutionizes education by promoting active, individualized learning experiences through real-world engagement and collaboration (Anderson, 2008).

A great number of the recent studies have highlighted the transformative role of technology in distance education. For instance, research by Tschida et al. (2022) emphasizes how AI tools can provide personalized feedback, thus enhancing student engagement and learning outcomes. Similarly, a study by Huang et al. (2023) investigates the integration of VR and AR technologies in online learning environments, demonstrating their effectiveness in creating immersive experiences that facilitate deeper understanding and retention of knowledge. Moreover, the incorporation

of communication systems and media theory, along with connectivism, offers valuable insights for educators, policymakers, and educational institutions. These frameworks highlight the communicative and instructional potential of media-based technological tools employed in distance education. In conclusion, the confluence of technological advancements and educational theories enriches the distance education framework and promotes accessibility and engagement. The implications of these findings extend beyond individual learning experiences, potentially transforming educational systems globally and paving the way for a more inclusive and equitable learning environment.

The following suggestion can be made within the framework of the research:

The article titled "The Evolution of Theories, Transformations, and Emerging Trends in Distance Education Worldwide: A Comprehensive Research Article" presents a positive outlook on the advancements in computer technologies through a thorough literature review. However, it is advisable for future researchers exploring the concept of distance education to delve into the theoretical foundations such as systems theory, communication theory, and media theory while also addressing the associated obstacles and challenges. Moreover, a critical examination of the implications of emerging technologies like artificial intelligence, virtual reality, and augmented reality is essential. This investigation should consider the potential drawbacks for students, educators, and educational institutions, ensuring a balanced perspective that acknowledges both the benefits, and the risks involved. In addition, researchers could explore interdisciplinary approaches that integrate insights from psychology, sociology, and educational technology to better understand the complexities of distance education. Investigating the impact of socio-economic factors on access to and engagement with distance learning could also provide valuable insights. Furthermore, longitudinal studies assessing the long-term effects of these technologies on learning outcomes and educational equity would be beneficial. By embracing a more nuanced and holistic approach, future research can contribute to the development of effective and inclusive distance education practices.

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We hereby declare that the study has not unethical issues and that research and publication ethics have been observed carefully.

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There were no human participants in the research process due to the document review. Therefore, ethics committee permission was not required.

REFERENCES

Adıyaman, Z. (2002). Foreign language teaching through distance education. *The Turkish Online Journal of Educational Technology–TOJET*, 1(1), 92-97.

Anderson, T. (2008). *The theory and practice of online learning.* Athabasca University Press.

Antalyalı, Ö.L. (2004). *Perception of distance education and feasibility of teaching operations through distance education (*Unpublished master's thesis). Social Sciences Institute, Süleyman Demirel University, Isparta.

Arar, A. (1999). *Historical development of distance education, distance education implementation models, and costs*. In *Proceedings of the First Distance Education Symposium* (pp.15-16). Kara Kuvvetleri Eğitim ve Doktrin Komutanlığı, Ankara.

Armstrong-Mensah, E. Ramsey-White, K., Yankey, B., & Self-Brown, S. (2020) Covıd-19 and distance learning: effects on Georgia state university school of public health students. *Public Health*, 8, 547.

Allen, I.E. & Seaman, J. (2011) Going the distance: Online education in the United States. the Online learning consortium. USA: Babson College.

Bayam, M., Aksoy, M.S. (2002). Distance education in Turkey and The Sakarya University implementation. *Journal of Science Institute of Sakarya University*, 6(1), 169-175.

Bruder, I. (1989) Distance learning: what's holding back this boundless delivery system? *Electronic Learning,* 8(6), 30–35.

Çoban, S. (2013). *Development of distance education and technology-supported education. In Proceedings of the XVI. Internet Conference in Turkey*. Istanbul.

Çukadar, S., Çelik, S. (2003). Internet-based distance education and university libraries. *Do*ğuş *University Journal*, 4(1), 31-42.

Deniz, Ş. (2024). A BRIEF HISTORY OF BLENDED LEARNING AND ITS IMPORTANCE IN ENGLISH LANGUAGE TEACHING. *International Journal of Eurasia Social Sciences*, 15(55), p. 419-434. Doi: 10.35826/ijoess.4423.

Dick, W., Carey, L., & Carey, J. O. (2009). *The systematic design of instruction* (7th ed.). Upper Saddle River, NJ – Merrill.

Holmes, W., Bialik, M., & Fadel, C. (2020). *Artificial intelligence in education*. Center for Curriculum Redesign.

Holmberg, B. (1985). *The Feasibility of a Theory of Teaching for Distance Education and a Proposed Theory.* ZIFF Papiere 60.

Huang, Y., & Liang, Y. (2023). Exploring the use of virtual and augmented reality in distance education: A systematic review. *Educational Technology & Society*, 26(2), 1-14.

Mayadas, F. (1997). Asynchronous learning networks: a sloan foundation perspective. *J. Asynchronous Learn,* 1(1), 1–16.

Miller, G. A. (1956). The magical number seven, plus or minus two – Some limits on our capacity for processing information. *Psychological review, 63*(2), 81.

Moore, M. G. & Anderson, W. G. (2003). *Handbook of distance education*. Mahwah, N.J – L. Erlbaum Associates.

Morrou, H.I. (1982). *A history of education in antiquity*; University of Wisconsin Press: Madison, WI, USA.

Nizam, F. (2004). *Possibilities and advantages of using mass communication tools in education. In Proceeding of KTÜ Academic Informatics* (pp.1-17).

Nasrullah, Y. (2014) Role of multimedia tutorials in distance education. *International Journal for Informatics,* 7, 933–941.

Littlejohn, S. W. (1989). *Theories of human communication* (3rd ed.). Belmont, CA – Wadsworth Publishing Company.

Tschida, C. M., Linder, K. E., & Swanson, R. A. (2022). The role of artificial intelligence in personalized learning: A systematic review. *International Journal of Educational Technology in Higher Education*, 19(1), 45-58.

Tzima, S., Styliaras, G., & Bassounas, A. (2019). Augmented reality applications in education: Teacher's point of view. *Educational Sciences,* 9(4), 99.

Papi, C., Büyükaslan, A. (2007). Developments in distance education in Turkey and France: Which educational rights? In *Proceedings of Colloque TiceMediterranean – Human/Change Issues in Distance Education.*

Richey, R., Tracey, M. W., & Klein, J. D. (2011). *The instructional design knowledge based – theory, research, and practice*. New York – Routledge.

Ryan, T. A. (1975). Analysis of the systems approach. In S. D. Zalatimo & P.J. Sleeman (Eds.), *A systems approach to learning environments* (pp. 118-129). Pleasantville, NY – Docent Corporation.

Olivier, M. (2014) Monetizing French Distance Education. A Field Enquiry on Higher

Education Value(s). In International Review of Research in Open and Distance Learning; Athabasca University Press: Athabasca, AB, Canada, 15.

Özbay, Ö. (2015). Current state of distance education in the world and Turkey. *International Journal of Educational Sciences, 2*(5), 376-394.

Samur, Y., Akgün, E., & Duman, B. (2011). Distance Education in Turkey: Past-Present-Future. *In Proceedings of the International Higher Education Congress. New Directions and Issues* (pp. 1325-1330).

Schunk, D.H. (1991). *Learning theories – An educational perspective*. New York – Macmillan.

Shahabadi, M. (2015). Synchronous and asynchronous learning e-learning styles and academic performance of e-learner. *Procedia-Social and Behavioural Sciences,* 176, 125–138.

Sun, R., Y.J., & Cai, Q. (2019). The effect of a virtual reality learning environment on learners' spatial ability. *Virtual Reality, 23*(3), 385-398.

Stotz, S., & Lee, J.S. (2018). Development of an online smartphone-based e Learning nutrition education program for low-income individuals. J*. Nutr. Educ. Behav*, 50, 90– 95.

Siemens, G. (2005). Connectivism –A learning theory for the digital age. Retrieved from http//www.itdl.org/journal/jan_05/article01.htm

Sinsiani, A.M. Obeidat, N, Alshdaifat, E, Elsalem, L, Alwani, M.M, Rawashdeh, R, Fares, A.S, Alalawne, T, ve Tawalbeh, L.I. (2020). Distance education during the COVID-19 outbreak, A cross-sectional study among medical students in North Jordan. 59, 186–194.

Skinner, B. F. (1974). *About behaviourism*. New York – Knopf.

Uşun, S. (2006). *Uzaktan Eğitim*. Nobel Yayın Dağıtım.

Webster, J., & Watson, R. T. (2002). Analysing the past to prepare for the future: Writing a literature review. *MIS quarterly*, xiii-xxiii.