



Digital Literacy and Education in Turkey

Türkiye’de Dijital Okuryazarlık ve Eğitim

ABSTRACT

Technological advancements and digitalization are fundamentally transforming lifestyles and modes of doing business worldwide. This revolution has also had a profound impact on the field of education. A significant shift has occurred from traditional classrooms to online platforms. This transformation has not only provided students with access to local resources but has also opened doors to global knowledge. In this context, digital literacy and education play a critical role in shaping the leaders and professionals of the future.

Turkey is aware of this digital revolution and has taken significant strides in the field of education. Schools and universities across the country are progressing toward digitalization, with the aim of equipping students with the skills to use modern technology. However, this rapid change brings about new responsibilities and opportunities.

In this article, we delve into the detailed examination of digital transformation in education in Turkey. We also explore various projects that offer digital literacy education.

Keywords: Digitalization, Education, Technology, Literacy

ÖZET

Teknolojik gelişmeler ve dijitalleşme, dünya genelinde yaşam biçimlerini ve iş yapma şekillerini kökten değiştiriyor. Bu devrim, eğitim alanında da büyük bir etkiye sahip. Geleneksel sınıflardan çevrimiçi platformlara doğru büyük bir geçiş yaşanmıştır. Bu değişim, öğrencilere sadece yerel kaynaklara değil, küresel bilgiye erişme fırsatı sunmuştur. Bu bağlamda, dijital okuryazarlık ve eğitim, geleceğin liderlerini ve profesyonellerini yetiştirmek için kritik bir öneme sahiptir. Türkiye, bu dijital devrimin farkındadır ve eğitim alanında da büyük adımlar atmıştır. Ülke genelindeki okullar ve üniversiteler, dijitalleşme yolunda ilerlemekte ve öğrencilere modern teknolojiyi kullanma becerileri kazandırmayı amaçlamaktadır. Ancak bu hızlı değişim, yeni sorumluluklar ve fırsatlar getirmektedir. Bu makalede, Türkiye’deki eğitimde dijital dönüşümü ayrıntılı bir şekilde incelemekteyiz. Dijital okuryazarlık eğitimi veren çeşitli projeleri ele almaktayız.

Anahtar Kelimeler: Dijitalleşme, Eğitim, Teknoloji, Okuryazarlık


INTRODUCTION

In today's world, technological advancements and digitization are fundamentally changing lifestyles and ways of doing business all over the globe. This revolution has had a significant impact on the field of education, transitioning from traditional classrooms to online platforms. Now, students have access not only to resources within their own country's borders but also to global knowledge. It is at this point that digital literacy and education become critically important in preparing future leaders and professionals.

Turkey is aware of this digital revolution and has taken significant steps in the field of education. Schools and universities across the country are progressing towards digitization, aiming to equip students with the skills to use modern technology. However, this rapid change also brings new responsibilities and opportunities.

In this article, we will comprehensively examine the current state of digital transformation in education in Turkey and delve into various projects in this field. Furthermore, we will discuss how digital literacy goes beyond being just a skill set and plays a role in imparting crucial competencies to students, such as critical thinking, problem-solving, and creativity.

Turkey's digital transformation provides an opportunity to prepare individuals better for the competitive business world of the future. Therefore, this article will provide a window into understanding the significance and potential of digital transformation in education in Turkey and will serve as a resource for anyone interested in keeping track of developments in this area.

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Digital education tools promote independent learning processes, fostering the development of essential skills such as critical thinking and problem-solving among students. In this context, we will also delve into the significance of platforms like Google Workshop, Khan Academy, Duolingo, and others in education within this text. However, the success of this transformation relies heavily on educators and students continually enhancing their digital literacy skills. The future of the education system has the potential to provide students with a better education by integrating technology and e-learning tools. It is crucial to remember that the primary focus of this text is the intention to make learning experiences more effective and accessible through this digital transformation in education. Let's now take a closer look at Turkey's journey in digital literacy and education.

Digitalization

Digitalization initially manifested itself in businesses as the automation of processes through the use of software systems. Subsequently, with the support of various digital technologies, especially the Internet, it led businesses to change their business models. Rapid development and integration of digital technologies marked the transition to the Fourth Industrial Revolution, known as Industry 4.0. The process of digitalization in businesses, encompassing all business processes, models, and organizational structures, began to be referred to as digital transformation.

A digital transformation strategy is not merely an information technology infrastructure and software systems management strategy; instead, it constitutes a significant part of the company's strategy. (Hess, vd. 2016). Its aim is to provide a roadmap for businesses to achieve digital transformation. However, creating a roadmap for digital transformation is a challenging task because digital transformation can occur in various ways within businesses, and all forms of digital transformation should be taken into account in the roadmap. (Kofler, 2018).

As we use it today, Digital Transformation is broader than digitization on the digital business path. Developing a digital transformation strategy requires much more connectivity. Digital transformation is the accelerated deep transformation of business activities, processes, competencies, and models to fully leverage the opportunities arising from the changes caused by digital technologies and their impact on society. (i-scoop.eu, 2020).

Digital transformation refers to the widespread use of digital technologies in various areas such as education, healthcare, commerce, finance, public administration, and social life. With digital transformation, the use of technologies such as cloud computing, the Internet of Things (IoT), artificial intelligence, and big data is expected to become more prevalent.

Digital Literacy

The concept of digital literacy first emerged in 1997 with Paul Gilster's book of the same name. In the book, digital literacy is described as the ability to understand and use information presented in digital format in various ways. In other words, it is the skill to access existing information using digital technologies and effectively generate new information from it. It also requires the abilities to process, synthesize, retain, and present information. (Belshaw, 2011).

Digital literacy allows individuals to transition swiftly from one medium to another, discern what kinds of expressions work with what kinds of information, and acquire skills in presenting their own information in a format that their audience will comprehend most easily. According to this ideal, digital literacy enables us to match the medium we use, the kind of information we convey, and the audience we are addressing. Standard operational definitions, on the other hand, operationalize what it means to be digitally literate in terms of the tasks, performances, and skills that one must exhibit concerning specific tasks. In this case, digital literacy consists of lists of functions and operations that one should perform with a computer and the internet. List (2019).

Digital literacy encompasses the complex cognitive, sociological, and emotional skills necessary for users to effectively operate in the digital realm. Activities within digital literacy include reading instructions on graphical screens, as well as creating new meaningful materials within this environment, and evaluating the quality and validity of digital information. Furthermore, digital literacy, which will also be considered as a measure in assessing the quality of learning activities in the digital environment, supports a user-centric approach. (Eshet, 2004).

Digital Transformation and Education in Turkey

Like in many parts of the world, including Turkey, children, especially before reaching school age, have encountered internet technologies, bringing up various issues that require attention, particularly in terms of the necessary precautions. Considering the time young people, like children, spend in the online environment, it has become inevitable to implement necessary regulations, especially in the field of education. In Turkey, initiatives

related to digital literacy by relevant institutions, including the Ministry of National Education, aimed at increasing informed approaches to internet use, have been noteworthy. (Bilgi Teknolojileri ve İletişim Kurumu, 2022).

In the IMD 2017 Digital Competitiveness Report, the overall performance of national economies is measured through three main components defined as "knowledge," "technology," and "readiness for the future." In terms of these components, the weakest aspect of our country is the "knowledge" component, ranking 60th. Regarding the sub-components of the "knowledge" category, Turkey ranks 49th in "skills," 63rd (last) in "education and teaching," and 48th in "scientific intensity." This situation underscores the necessity for Turkey to make advancements in education and teaching in order to enhance its digital competitiveness. (Sönmez, 2018).

In Turkey, there are various applications that we can evaluate in the context of digital transformation in education and higher education. For instance, Boğaziçi University, whose proposal submitted to TÜBİTAK's Excellence Center Support Program (1004 Program) under the "High Technology Platforms Call" has been accepted for funding, will establish a "Digital Transformation - Industry 4.0 Technologies Excellence Center." The aim of this center, which is targeting technological product development, is to serve as a national platform for research, development, and high-tech applications in Turkey's "Industry 4.0 Technologies" (BOUN Industry Platform, 2019). In addition, Yeditepe University has launched a "Master's Program in Information Technologies and Social Media Education" under its Institute of Educational Sciences, emphasizing the transition from "Industry 4.0" to "Society 5.0." This program, claimed to be a first in Turkey, includes courses such as social network analysis, social media literacy, artificial intelligence applications in education, and social media management in education (Yeditepe University, 2018).

Applications for Digital Transformation in the Field of Education in Turkey

Institutions and organizations at the center of education should consciously address the need for digital transformation in the implementation process. During this process, strategies need to be defined, and a roadmap should be drawn. Therefore, in the process of digital transformation in Turkey, it is important to consider how a transformation will take place in the formal and informal learning processes, as well as the approach and preferences of educational institutions during the adaptation phase. In our country, the existence of digital transformation in education is acknowledged, and various initiatives such as the 'Increasing Opportunities and Improving Technology Movement (FATİH) Project' at the K12 level, EBA applications, and the 'Digital Transformation Project in Universities' are observed. (MEB, 2020: Şener & Gündüzalp, 2018).

As part of extracurricular education, initiatives that support digital transformation in education are noteworthy in Turkey, and these initiatives are carried out with public support. These include Deneyap Technology Workshops, Design-Skill Workshops, '81 Cyber Heroes' projects in all 81 provinces, and the world's largest technology festival, TEKNOFEST, with the participation of numerous public and private sector organizations. Additionally, initiatives undertaken in Turkey at the elementary, middle school, high school, and university levels as of March 2020, during the declared pandemic period, hold significant value within the scope of digital transformation in education.

Activities of the Ministry of National Education

The Ministry of National Education (MEB), one of the prominent institutions in the development of the education infrastructure, has implemented digital transformation practices. When transitioning from the traditional system to the digital one, the challenges of resources, infrastructure, and the relationship between students, teachers, and parents are the first to be encountered. To address these challenges, the MEB has established the Educational Informatics Network (MEBBİS) and the e-school system. MEBBİS allows for resource management, while the e-school system facilitates communication between parents and teachers and enables remote in-service training.

Secondly, the increase in internet usage and the proliferation of mobile devices have led to a demand for digital content and resources in education. Initially, printed books were being converted into digital formats, but today, content suitable for augmented reality applications created in interactive environments is being produced, and production continues to grow. The Ministry of National Education (MEB) utilizes the Education Information Network (EBA), which includes tests, subject explanations, and e-course modules, for the benefit of students and teachers to access remotely. (Aksu, 2018; Özen, 2019).

Another application of digital transformation in education is the FATİH Project. The project was initiated to ensure equal opportunities in education and improve technology in schools by effectively using information technology tools in the teaching and learning process to appeal to more senses (MEB, 2020b). Within the scope of the FATİH Project, the goal is to provide each school at the formal K-12 education level with VPN - broadband internet access, infrastructure, high-speed connectivity; each classroom with interactive boards, wired/wireless internet access; each teacher with EBA applications, EBA market, cloud storage, and lesson sharing; and each student with

EBA applications, EBA market, cloud storage, digital identity, and assignment sharing, aiming to enhance the learning experience. (MEB,2020b).

In Turkey, as in the rest of the world, efforts have been made by the Ministry of National Education (MEB) to cultivate a workforce that can keep up with the times. In this regard, the STEM Education Report was presented in 2016 (MEB, 2016). STEM education is an educational paradigm that supports interdisciplinary collaboration and focuses on teaching science, technology, engineering, and mathematics. Thus, the integration of STEM education into the Turkish Education System was emphasized, and it found its place among the MEB's initiatives. With the increasing demand for graduates who have undergone STEM education in the ongoing global digital transformation process, not only public institutions working in the field of education but also the business world in Turkey are undertaking projects to contribute to the STEM field (TUSIAD, 2020). As a result, STEM education has become an agenda item not only in Turkey but also in many countries, aiming to train the workforce needed for the future.

The Efforts of the Higher Education Institution

In order to promote digitalization in higher education in Turkey, the 'YÖK Goes Digital' project was launched. Within this framework, the 'Digital Transformation in Universities Project' was initiated in 2019 at eight pilot universities selected from the Eastern and Southeastern Anatolia regions (YÖK, 2020b). Under this project, a total of 3,093 faculty members working at universities that signed protocols and were selected for pilot studies received training on 'Learning and Teaching in Higher Education in the Digital Age' as of November 2018.

With this project, the aim is for universities to enable faculty members and university students to communicate interactively through the Learning Management System (LMS) to sustain both face-to-face and digital education. In the mentioned LMS system, it is stated that each student can access book, video, and animated course content and have their own personalized areas (YÖK, 2020b). Additionally, there is a priority plan to integrate technology into the learning processes, including massive open online courses, open educational resources, artificial intelligence, cloud computing, and data mining studies.

Within the scope of the 'Preparing Strong Generations for the Next 10 Years' project, YÖK (Higher Education Council) provides two thousand students with scholarships for doctoral education in one hundred fields that our country needs. One of these fields is 'Digitalization in Education,' which can be considered as an indicator of YÖK's commitment to the subject. In line with the concept of digitalization, YÖK has also established Massive Open Online Course (MOOC) platforms to eliminate institutional boundaries. Examples of these platforms include Akadema and AtademiX. Akadema, with the goal of enabling individuals to become lifelong learners, allows people of all ages to choose this platform for personal development (Akadema, 2020; Ergüney, 2015).

Another KAÇD platform in Turkey is AtademiX. AtademiX is managed by Ataturk University Distance Education Application and Research Center. As the first Turkish platform established institutionally, AtademiX offers courses taught by experts from different universities, and successful students are awarded participation certificates (AtademiX, 2020; Aydın, 2016).

In recent years, various universities in our country have also offered "digital transformation expertise" certificate programs (DEÜSEM, 2020; İTÜSEM, 2020). Participants in these programs are expected to have awareness and conceptual knowledge about digital transformation. They should also be capable of contributing to the digital transformation processes of various institutions and businesses, managing these processes, increasing productivity, and providing realistic contributions to stakeholders.

Digital Education Applications

The digital revolution in education offers extraordinary opportunities and prospects for all stakeholders involved. When we take into account not only what we have today but also what we can achieve in the future, it becomes evident that a real revolution in education is inevitable. Under this heading, the primary digital education applications will be discussed, and their functional introductions will be provided along with their main characteristics. It should be stated from the outset that digital education applications are not limited to the applications included here and analytically explained below. Of course, there are other existing or ready-to-be-implemented applications as well.

iTunes U2

iTunes U provides everything teachers need to gather their classroom in one app. It allows you to prepare lessons with your own materials, collect assignments from students, initiate class discussions, and engage in one-on-one conversations with students, all on your iPad. iTunes U also enables anyone with an iPhone, iPad, or iPod touch to

learn from the world's largest collection of free educational content. Teachers can add their own teaching materials, including worksheets, web links, photos, and videos, from various document providers.

They can also track when students have viewed or completed assignments and remind them of assignment due dates. Additionally, teachers can grade student work and track student progress in the grade book. (Apple,2023).

YouTube

YouTube is a video hosting website. YouTube is a platform that aims to be used as a pedagogical resource for educators to teach information from all regions of the world through videos (Duffy, 2008). Unlike other sharing sites, YouTube has a network structure in which every user's voice, contribution, and value are considered, fostering mutual support in learning (Skiba, 2007). YouTube has created a virtual library environment by providing access to videos for its users (Duffy, 2008). Moreover, it has been observed that it is effective in users' language development through the videos it contains.

In a survey conducted, it was seen that 80 out of 84 people agreed that YouTube has an important place in education by providing control over the use of new developments on the Internet such as YouTube for tracking geography lessons (Demirci, 2008).

Coursera

Coursera is a social entrepreneurship organization founded by Stanford University Computer Science professor Andrew Ng and Daphne Koller. It offers massive open online courses (MOOCs) in various fields and subjects that can be accessed and utilized by everyone, free of charge. It continuously expands its educational topics through collaborations between universities. It provides services in engineering, humanities, medicine, biology, social sciences, mathematics, physics, business, law, and many other areas. As of February 2017, it has over 24 million registered users and offers more than 2,000 courses.

Khan Academy, on the other hand, offers a personalized learning experience for students, both inside and outside the classroom, through instructional videos and interactive exercises. In our library, you can find a wide range of subjects, including mathematics, science, computer programming, history, art history, economics, and more. For mathematics, it uses advanced level-detection algorithms to identify students' strengths and address their weaknesses, guiding learners from kindergarten to university levels.

Duolingo

Duolingo is a foreign language teaching website with the slogan "free language education for everyone in the world" and its symbol is a green owl. The philosophy of the site is based on the idea that "everyone has the right to access the highest quality education," as noted in the "About" section. This project, which was first launched in 2011, also received support from the International Science Fund in its initial stages. The application supports 23 different languages and also has a mobile application that can be easily used on all tablets and phones. (Evrin Ağacı,2016).

Google Dijital Atölye

It is possible to classify digital tools used in educational environments in various ways. While some of these tools are considered as "hardware," others can be categorized as "software," and some as "environments." However, it is important to note that certain hardware components may not function effectively without specific software. Among the commonly used hardware components for educational purposes, "video projectors" can be mentioned as an example. Additionally, "smart boards" or "interactive whiteboards" are other hardware devices that have found their place in many educational settings and continue to be used. On the other hand, "mobile devices" can be cited as examples of hardware that become functional only when accompanied by specific software. "Smartphones" and "tablets" have made significant strides in both individual and educational use in the last 3-4 years (Seferoğlu, 2014). Furthermore, the interest of tech giants in the field of digital education is steadily increasing. One of the most recent and notable examples is Google's "Digital Workshop," a education project developed with specialized content for Turkey.

Internet-based e-learning is available in various forms, and to understand different e-learning modalities, it's essential to consider four e-learning modalities: "individualized self-paced e-learning offline," "individualized self-paced e-learning online," "group-based asynchronous e-learning," and "group-based synchronous e-learning." Focusing on the first and third methods can be more functional for an individual or a group of students using the internet as an instructional tool. Assessing the perception, effectiveness, accessibility, and adoption of e-learning can provide more explanatory and guiding information by using appropriate parameters to investigate the

awareness and utilization of e-learning platforms by educational institutions. Google Atelior is one of these providers (Nyagorme et al., 2017).

DISCUSSION AND CONCLUSION

The efforts and projects related to digital literacy will significantly contribute to Turkey's readiness for digital transformation in various sectors in its future investments. Development, which has now become a top priority, requires structured approaches in line with digitization and the demands of the digital age. Projects that enhance awareness in this field are crucial. Only through such initiatives can integration into the ongoing global digital transformation process be possible. The importance of possessing digital literacy skills is increasingly felt day by day, not only in education but also in healthcare, the economy, and public administration, both in the private sector and within government institutions.

When examining the manifestation of digital transformation in higher education in Turkey, it is evident that there is a focus on integrating services and operations into a central transformation goal. However, there remains a considerable distance to cover for our country to catch up on this path.

To enhance our global competitiveness in the digital arena, Turkey needs to invest in education, which is one of the primary areas that demand attention. The concept of "Virtual Renaissance," the central theme of ITU EMOS's 2017 event, may serve as a meaningful starting point for understanding today's digital transformation and its dynamics. Achieving this Virtual Renaissance necessitates a contemporary restructuring of technical infrastructure, human resources, materials, and more, in educational institutions at all stages and especially in higher education.

The "Dijitalleşen YÖK" (YÖK Goes Digital) project, launched under the slogan of "Digitized YÖK," represents a significant digital step taken by our universities in this direction. In this context, it is essential to establish centers focused on digital transformation, equip human resources with training aligned with the digital age, develop online educational materials and courses, implement lessons and applications to promote digital literacy, increase projects supporting industry-academia collaboration in the field of digital transformation, ensure the continuity of national/international academic events (such as conferences and seminars) with a focus on digital transformation and digital literacy, and expand the spectrum of undergraduate and postgraduate programs to cater to the professions of the future. The sustained efforts within higher education institutions in our country, as exemplified above, are crucial for Turkey to rise in the global rankings of digital literacy and to prepare the digital citizens of the future.

The widespread adoption of technology and the consequences of globalization have given rise to discussions about the concept of digital transformation. Over time, digital transformation has become an inevitable process aimed at providing more effective and efficient solutions to various challenges in multiple domains. The anticipation that new technological developments could revolutionize education or address its issues has persisted for years. The advent of the internet has accelerated these expectations on a global scale. Moreover, studies have shown that technology's use in education has the potential to offer a range of opportunities that would otherwise be challenging to attain (Hew & Brush, 2007).

The transformation occurring in various aspects of society makes change in education an unavoidable necessity. Thus, the concept of digital transformation in education has become one of the critical areas for consideration and examination. This study delves into the notion of digital transformation in education within the context of Society 5.0. It evaluates the evolving roles of both teachers and students in the digital transformation process and explores the dimensions of the digital transformation process concerning educational technologies. Additionally, it discusses global digital transformation processes and applications and sheds light on the dimensions of practices and initiatives within the digital transformation process in Turkey.

The digital transformation in education, facilitated by hardware, software, and online platforms, is providing students with unique and personalized learning experiences. As a result, students can progress at their own pace within interactive learning environments, fostering the development of critical skills. Platforms like Google Workshop, Khan Academy, Duolingo, Youtube and others are pushing the boundaries in education by offering a wide spectrum of learning opportunities to students.

However, the success of this digital revolution relies on educators and students continuously enhancing their digital literacy skills. The transformation in education has the potential to provide students with a better education by closely integrating technology and e-learning tools. It is important to remember that the goal of this process is to make learning experiences more effective and accessible. Keeping this objective in mind will unlock the true potential of the digital revolution in education.

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