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Technology Adaptations within Adult Education: MOOCs

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Abstract

In today's world, education has become a lifelong activity rather than an activity carried out in certain periods of life. The rapid change in technology has brought about rapid and radical transformations in all areas of life. These transformations have been realized in short periods of time in a way that has never been seen before in human history. For social development, and economic and social progress, societies have had to acquire competencies to cope with these rapid transformations and lifelong learning has become increasingly important. In order to cope with this rapid transformation created by technology, technology has been used again and lifelong education processes of individuals have been carried out largely by using educational technologies. This study focuses on the adult education process, which is the most important component of lifelong learning. In the adult education process, Massive Open Online Courses (MOOC) applications, which have left their mark on the field of educational technology in recent years, are discussed. This technology, which has been frequently used in the adult education process in recent years, has been compiled by examining the studies in the literature.

Keywords: Adult Education, Educational Technology, MOOCs.

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INTRODUCTION

Technology has become the most important concept in every aspect of today's world. Human history is experiencing a faster development and change than ever before thanks to technological advances. The most important actor of this development in the scientific field is information and communication technologies, digitalization (Frolova et al., 2020). This development has reduced the rate of change of concepts that change over hundreds of years in the traditional structure to tens of years, and in some areas even to one in a few years. This transformation creates a great adaptation burden on human beings. Societies are making radical reforms in their education systems in order to raise generations that can adapt to this rapid change, and in a changing world, education is transforming from a formal activity that continues until a certain age to a lifelong synthesis of formal, non-formal and informal. The vocational and social skills acquired in education systems either lose their validity or undergo significant changes in the later periods of an individual's life. This transformation makes lifelong learning and therefore the concept of adult education more important than ever. Of course, technology is the most effective tool to adapt to this transformation created by technological development. These technologies are used not only as tools but also as applications to improve learning (Papadakis, 2023).

In recent years, educational technologies have gained great importance in both formal education and non-formal and informal education processes. A theoretical and practical conceptual framework has been established with many studies in this field. These studies, which are mostly focused on formal education processes, have increased their impact on non-formal and informal education processes, especially in recent years. Education is a systematic human training process that societies have been using for thousands of years. This process ends in the traditional structure when the individual reaches the age of physical and mental maturity and continues with the direct contribution of the individual to the society after this process. This traditional structure of thousands of years is becoming inadequate for 21st century people. Lifelong education and learning has become a necessity in today's knowledge-based society, given the processes of social change (Solcova et al., 2024). Lifelong learning covers adult education processes as a theoretical approach. Adult education secures the personal development of individuals and enables them to play a role in ensuring economic and social progress (Bedrule-Grigoruţa & Rusu, 2014). In this context, training individuals who can respond to changing labor force and market needs contributes to the formation of stronger human capital for national development and economic growth and to the social and psychological readiness of the individual for a changing world. Being able to solve complex processes, being a problem solver and having a certain level of technological literacy has become a necessity for today's workers (Parrish & Johnson, 2010). Adults who are lifelong learners, participatory, democratic, sensitive to individual, social and environmental problems, and capable of teamwork are the prominent needs of

our age (Okçabol, 2006). Any kind of adult education developed by the public or private sector triggers the development of employment, increased competitiveness and social development (Bedrule-Grigoruţa & Rusu, 2014). Adult education is becoming more and more important in order to create a competitive, innovative and dynamic workforce and society that can cope with technological advances.

Adult education differs from pedagogical education both in theory and practice. Adults find it difficult to participate in typical face-to-face education due to their duties such as having a full-time job and raising a family (Gonzales et al., 2022). At the same time, since adult education covers a wide age range, the needs and current situations of each age range are quite different from each other. For these very reasons, adult education is one of the types of education that needs educational technologies the most. Autonomy in adult education is important in order to provide adult learners with the flexibility to choose the time and pace of learning to accommodate work and family obligations (Graham, 2006). This autonomy can be achieved through educational technology applications that have been used in educational processes for many years. For these very reasons, technology-enhanced learning has become increasingly important (Zhang & Cheng, 2012). The use of technology in the adult education process started with the use of radio and television (Nicolaou, 2022), followed by audiovisual platforms, social media, social networks (Matsiola et al., 2015), and continues today with mobile technologies and mobile applications (Nicolaou, 2021; Podara et al., 2021). There is a period in which how to use technology is more important than whether to use it (Neiderhauser & Lindstrom, 2006). Many educators tend to misuse these technologies in the adult education process (Brinia & Ntaflou, 2015). Reasons such as the fact that the concept of adult education addresses a very wide age range, the extent to which existing technologies meet the theoretical foundations, and the lack of technology literacy of educators are the most important obstacles to choosing the right technology.

Since the 2010s, Massive Open Online Courses (MOOC), a fairly new concept, has entered the field of educational technology. The latest innovation in the field of digital learning content delivery is the development and adoption of MOOCs (Borrella et al., 2022). Although the initial philosophy was largely to enable students to successfully complete higher education (Daza et al., 2013), the traditional audience for MOOCs has been adults without formal ties to universities (Gomez et al., 2022; Zhang et al., 2021). This has placed MOOCs in a dominant position in the field of adult education technology.

In this study, the concept and conceptual framework of adult education and MOOCs, which have great potential as an adult education technology, are examined in the context of adult education. The aim of the study is to examine the use of MOOCs in adult education processes with theoretical

foundations. In this review study, adult education, theoretical foundations of adult education, the use of MOOCs in adult education processes are included.

Adult Education

The concept of adult education is theoretically associated with andragogy. Originating from the need for a descriptive theory in the field of adult education, the concept of andragogy has been extensively analyzed for many years (Knowles et al., 2020). It is suggested that the term andragogy was first used in 1833 by Alexander Kapp, a German teacher, to describe Plato's theory of education (Knowles et al., 2011). However, there are also opinions that the term was first used in 1921 by Eugen Rosenstock and in 1927 by Lindeman in his work “Learning through experience” (Duman, 1999; Thorpe et al., 1993). The concept became more recognized with Malcolm Knowles in the 1970s due to his work in the United States (Knowles et al., 2020). The concept, derived from the Greek words androgos (man) and agein (education), is defined as the art of helping adults acquire knowledge (Titmus et al., 1979). Andragogy includes six principles underlying adult learning; (1) learner's need to know; (2) learner's self-concept; (3) learner's prior experience; (4) readiness to learn; (5) orientation to learning; and (6) motivation to learn (Knowles et al., 2020).

The concept of adult education is also defined with concepts such as public education, non-formal education, mass education, community education, social education and continuing education (Kaya, 2014; Yiğit, 2022). In the conceptual context, it includes providing adult individuals with knowledge, skills and understanding for socialization as well as a profession by public or private organizations (Bülbül, 1991; Duman, 1999). It is all of the regular educational activities that help people defined as adults to increase their knowledge, improve their abilities, improve their professional competencies, and develop their attitudes and behaviors in a balanced individual and social way (Titmus et al., 1979). The renewal and development of the knowledge and skills of adults who are excluded from formal education activities are provided through adult education activities (Yazar, 2012). The meaning of the concept when it first emerged and the meaning it has gained today are different from each other (Kaya, 2010). Especially the extraordinary technological development in the last quarter century has increased the responsibility attributed to the concept of adult education. At this point, although the pressure to adapt to changing labor force conditions and to develop human capital for economic prosperity comes to the fore, adult education is not only related to the labor force and the economy, but is also very important in terms of improving the quality of life of the individual and becoming a participatory part of society (Sivan & Ruskin, 2000). According to The Organisation for Economic Co-operation and Development - OECD (2000), the five rationales for lifelong learning are; (1) the learning economy argument; (2) the extent and pace of technological change and growth in knowledge and information; (3) the inadequacy of traditional redistributive policies as they ignore

the life-cycle patterns of individuals' incomes; (4) In response to unemployment - moving towards active policies that directly contribute to the formation of human capital and the psychological and social well-being of individuals; (5) The "social cohesion" argument, which argues that because of the importance of learning in the knowledge society, those who miss the opportunity for education are subject to effective social exclusion. Although there are criticisms that the lifelong learning process has been abstracted from its philosophical and humanistic dimensions and turned into an economic content (Kaya, 2014), adult education has social and humanistic as well as economic justifications, as seen in the OECD justifications.

The age, social and professional responsibilities, independence, family responsibilities, and past learning experiences of adults significantly differentiate adult education from child education (Deveci, 2021). Researchers have formulated their own ideas and theoretical studies on how adult education differs from childhood learning (Merriam et al., 2007). The main aim of these studies has been to differentiate between pedagogy and andragogy. Deveci (2021) states the andragogical and pedagogical differences in terms of process elements in his book as follows;

Table 1. Andragogical and pedagogical differences in terms of process elements

Process Elements	Pedagogical Approach	Andragogical Approach
Preparation of learners	Minimum	Providing information, preparing for participation, helping to set realistic expectations, starting to think about the content
Environment	Authoritarian, Official, Competitive	Relaxed, trusting, mutually respectful, semi-formal, warm, cooperative, supportive, openness and sincerity, humanistic
Planning	By the teacher	teacher and learner planning together
Identification of needs	By the teacher	Collaborative determination
Identification of objectives	By the teacher	Through consensus
Designing learning plans	Subject-centered, Content units	Sorted by degree of readiness, Problem-based units
Learning activities	Transferist techniques	Experiential techniques (questioning)
Evaluation	By the teacher	Redefining needs together

Source: (Deveci, 2021)

In terms of process elements, the two approaches are quite different. While the pedagogical approach emphasizes the guidance, coordination and management of a teacher, the adragogical approach involves the learner in collaboration with the teacher or the learner alone in many of the tasks of the teacher's role. This clearly reveals the role of the learner in adult education. In adult education, the process is planned by taking into account the expectations, demands, abilities and needs of the learner, and the responsibility for learning falls on the individual (Longworth, 2003). Although there was an opinion that there were big differences between pedagogical and andragogical

approaches at the beginning, in the following processes, an opinion has been formed that these approaches are not far from each other (Knowles, 1996).

The use of technology in adult education is much more prominent than any other educational activity. Due to the characteristics of adults, their participation in education independent of time and space is extremely important. Of course, although adult education is also carried out in traditional environments such as classrooms, it is seen that the use of this method in adult education is very limited. Time and space independence in education can only be achieved through educational technology adaptations. These technologies reduce the cost of education and are extremely useful in creating educational environments with individual learning speed and control. In the report "Achievements under the Renewed European Agenda for Adult Learning" published by the European Commission - CE (2020), which includes monitoring data on adult education processes in Europe, it is stated that countries pay special attention to the use of digital tools and technology in order to reduce inequality of opportunity for disadvantaged groups and to increase equal access and accessibility in adult education. It is thought that the use of technology will be the main component of adult education processes in the future. In the future policy orientation of adult education area of the same report, it is stated that there should be an even greater focus on the use of digital tools in adult learning, more emphasis should be placed on digital technologies both for the use of digital tools by adults and for educational purposes, and at the same time, experts in the field of adult education should be provided with these skills and competencies (CE, 2020). At this point, educational technologies are tried to be placed on the backbone of mass adult education.

Theories of Adult Education

Adult education theories are evaluated in three main categories based on the characteristics of adults, life situations and awareness raising (Deveci, 2021). Among these theories, Malcolm Knowles' Andragogy Theory, which was developed based on the characteristics of adults, is one of the most widely known theories. In this section, Malcolm Knowles' Andragogy Theory, Paulo Freire's Consciousness Raising Theory and Jack Mezirow's Transformative Learning Theory are discussed.

Malcolm Knowles Andragogy Theory: Andragogy, one of the approaches based on the characteristics of adults, was introduced to the literature by Knowles and andragogy and Knowles became a whole. Knowles is the one who used the word andragogy in adult learning. Andragogy means the art and science of helping adults learn, the study of adult education theories, processes and technologies (Titmus et al., 1997; Weingand, 2001). According to Knowles, self-concept has a great influence on learning behavior (Lukas & Teslar, 2013). According to Knowles, who introduced the concept of andragogy to the literature, he makes four valid definitions to explain the concept of adult. The first of these is the biological definition. According to this definition, individuals become adults

when they reach reproductive age, that is, when they reach puberty. Another definition is the legal definition. According to this definition, individuals are adults when they reach the age when they can legally vote, have a driver's license and marry with their consent. The social definition is that individuals become adults when they have roles such as full-time working spouse, mother and father, and voting citizen. Finally, according to the psychological definition, individuals become adults when they are responsible for their own lives, can direct their own lives and have a sense of self (Knowles et al., 2011). Although the concept of andragogy is identified with adult education, andragogy methods have been applied to school-age children over time, and teachers who provided successful feedback on this subject contacted Knowles (Knowles, 1980). According to Knowles (1980), who introduced the Self-Directed Learning Approach in the field of adult education, adult education is the process in which individuals, with or without the help of others, take the initiative in recognizing their own learning needs, setting learning goals, identifying the human and material resources necessary for learning, choosing and applying appropriate learning strategies, and evaluating learning outcomes. At this point, the term andragogy forms the basis of the self-directed learning approach (Avcı, 2022).

Paulo Freire Consciousness Raising Theory: According to the theory, which is based on raising consciousness in adults, being a human being means being free. He based his writings and criticisms on the liberation of oppressed groups. In his work "Pedogogy of the Oppressed", he presents his views on the theory of consciousness raising (Deveci, 2021). Explaining the relationship between teacher and student as the "Banker Education Model", Freire argues that this process does not contribute to the learning and self-development processes of individuals (Freire, 1991). According to this approach, traditional educational practices are likened to transactions in a bank. At this point, education is seen as "investment of savings", while students are "investment objects" and teachers are "investors". In this system, instead of communicating with students, teachers apply an investment system in which students patiently receive, memorize and repeat bonds just like in a bank. At this point, students who mechanically memorize what is told are turned into containers filled by their teachers. Accordingly, the more the teacher fills the containers, the better the teacher, and the more the student allows the containers to be filled, the better the student (Freire, 1991). The main point emphasized here is the concepts of liberation and consciousness-raising in adult education. According to Freire (1991), the concept of teaching does not only mean transferring various contents to students and having them memorize these contents in general terms. Here, he states that the concepts of teaching and learning should be a process that should be carried out with methodological critical perceptions on both sides (Freire, 2019). The banker education model eliminates the creativity power of students. In this direction, Freire (1991), who puts the "problem-defining education model" based on praxis against the banking education model, puts the concept of praxis at the basis of his pedagogy. At this point, praxis means transforming the world by taking action. In praxis-based education, the

individual should act on the materials surrounding him/her and an educational model based on systems that allow the individual to think for transformation should be created (Mayo, 2012).

Jack Mezirow's Theory of Transformative Learning: Another adult education theory based on raising awareness in adults is Jack Mezirow's Transformational Learning Theory. The theory is based on psychoanalytic and critical social theory. According to Mezirow (1996), learning is the stage of creating a guide for future behavior by developing new or corrected interpretations using one's experience. In other words, transformational learning is the process of making the meaning world and mental habits of individuals more inclusive in order to produce correct beliefs and thoughts (Mezirow, 2000). Individuals can change, adapt or reject the new information they acquire to their own habits of mind. In this way, individuals think critically and question both individual and social assumptions (Mezirow, 1998). The basis of learning is to interpret the meanings that individuals derive from their new experiences and at the same time to use them as a guide to their future actions through their past experiences. The important point here is that individuals have past experiences in their lives. Thanks to these experiences, transformation occurs and individuals learn new experiences through the process of critical reflection (King, 2002). Transformational learning, which is an adult learning theory, means that adults decide what, when and how to learn. In the learning process, adults determine their own needs and take responsibility for their own learning. The important point here is that adults are responsible for their own actions by considering their preferences and decisions (Akpınar, 2010).

Apart from these theories, there are many other theories that have been put forward for the adult learning process, but these are the theories that are frequently discussed in the literature. The common point of adult education theories is the responsibility of the individual in the learning process. Self-regulation skills in this process, taking a say in the processes such as the purpose, goal, method, etc. of learning, and the ability to associate learning with the adult's current experiences are key concepts.

Adult Education and MOOCs

The term MOOC was first used in 2008 by Dave Cormier and Bryan Alexander to describe the open online course “Connectivism and Connective Knowledge” developed by George Siemens and Stephen Downes (Downes, 2008). Massive Open Online Courses (MOOCs) refer to structures where anyone can enroll in courses, most of which are offered free of charge. The concept was introduced in 2011 by various organizations such as Coursera, Udacity and EDX (Alhazzani, 2020). MOOCs, a form of open distance learning, include free courses in the field of technology-supported learning, open and distance education that can be accessed from anywhere in the world (Spyropoulou et al., 2015; Yousef et al., 2015). MOOCs are online courses that allow learners to work at their own learning pace and under their own control (Sideris et al., 2018). New knowledge obtained as a result

of modern scientific research has contributed to the creation of new technological tools such as MOOCs, thus enabling learners to gain a place in the competitive world (Alhazzani, 2020). In this respect, MOOCs are becoming an important tool for individuals to adapt to changing world conditions and strengthen their human capital. MOOCs, which do not have special conditions for entry, offer inclusive, equal opportunities in education and independent learning opportunities (Gaebel, 2013). MOOCs (Daza et al., 2013), which have largely developed to provide students with the preliminary knowledge they need to successfully complete higher education, are largely used by highly qualified professional adults along with higher education students (Christensen et al., 2014; Impey & Formanek, 2021; Lambert, 2020; Li et al., 2022; Liyanagunawardena & Williams, 2016; Papadakis, 2023). In a study conducted by Emanuel (2013) with approximately 35 thousand MOOC users, it was observed that more than 80% of the learners were university graduates. This shows that MOOCs have become an important adult education technology.

Siemens (2005) and Downes (2005), who are the pioneers of the MOOC concept, consider learning within the conceptual framework of connectivism, which views learning as a network phenomenon influenced by technology and socialization. In connectivism, learning begins when a learner connects and joins a learning community (Goldie, 2016). A learning community is defined as a set of similar interests that enable interaction, sharing, dialog and thinking together (Siemens, 2005). MOOC platforms correspond to the concept of learning community in connectivism theory. Siemens (2013) categorizes them into three different models: xMOOCs, cMOOCs and quasi-MOOCs. The characteristics of these models are as follows (Siemens, 2013:7);

- **xMOOCs:** It is a model that is usually developed by institutional structures such as universities and is built on educational videos ranging from 3-30 minutes by expert instructors, with the teacher as the expert and the student as the information consumer. Learning is the process of the student copying the knowledge structure determined by the course designer. Student-instructor feedback is rarely used except in discussion forums. Assignments are usually graded automatically by computer.
- **cMOOCs:** It is based on a model that views knowledge as networked situations and learning as a process of creating networks, adding and pruning connections. It considers knowledge as productive and emphasizes sharing knowledge by creating artifacts. Unlike xMOOCs, there is a limited structure and an open flow of activities other than the weekly plan. The learner is autonomous and in control. A lot of tools and technologies are used during the course. The learner can customize the process by choosing the technology of his/her choice.
- **quasie-MOOCs:** The approach adopts an asynchronous learning approach, which does not use the social interaction of cMOOCs and the automatic grading or tutorial-driven

presentation tools of xMOOCs. Learning objects are loosely connected and do not form courses.

These three approaches to MOOCs and the connectivism approach, which forms the conceptual framework of the organization, are extremely important in terms of understanding the functions of MOOC structures.

When the characteristics of adult learners are examined, it is seen that it is very important for them to take an active role in the educational process and personalize the educational process according to their own characteristics (Sideris et al., 2023). At this point, the self-regulated learning process emerges. Self-regulated learning, which is the process in which the learner exhibits adaptive skills with personal initiative, contributes to the adult education process (Armakolas et al., 2015; Zimmerman & Schunk, 2001). MOOCs are tools where self-regulated learning can be applied to the extent that they enable learners to individualize the learning process (Sideris et al., 2023). Another important aspect of adult learner characteristics is the established learning principles and experiences of adult learners, and if these are ignored, adults may feel a sense of rejection and adoption of new knowledge may be prevented (Polson, 1993; Rogers, 1996). Therefore, the active participation of adults in education is of utmost importance. When examined from this aspect, it is seen that the cMOOCs model is the most ideal model especially for adult education processes. cMOOCs provide the critical conditions of adult learner characteristics with its adaptive learning environment, active participation and knowledge producing position.

MOOCs are highly applicable tools for the adult education process, especially for the transfer of desired knowledge and skills on a mass basis. MOOCs will provide significant benefits in the adult education process by providing both time and space independence and providing competencies that are critical for adult education. MOOCs courses are generally asynchronous online courses consisting of asynchronous videos, partially synchronous online courses, university course flow-lesson plan fiction, online pre-tests and post-tests to measure the effectiveness of education, instructor-student communication channels are generally absent, learner-learner communication and networks can be provided with structures such as discussion forums, etc., no prerequisites are required for registration, learners at any level of education - prior knowledge level are educational activities carried out at their own learning pace at any time and place. These features have led MOOCs to be used as a means for adults who have come to the end of formal education to adapt to the changing world skills in professional and personal terms. Although it is difficult to say that it meets all the needs of adult education theories, it is seen that it will be used frequently in the future in order to achieve a high impact at low cost, especially in mass education. Although many MOOC providers such as Open edX, Coursera, Udemy, Udacity, FutureLearn, Khan Academy, etc. (Papadakis, 2023; Yuan & Powell,

2013), which have emerged in the process, generally produce courses consisting of English-language content, they try to provide access to wider audiences by enabling other learners to develop the subtitle languages of the course with the demand for open source language support of the same platforms or directly translating the language of the educational content into other languages. With the spread of automatic subtitling and dubbing processes with the developing artificial intelligence technologies, it will be possible to automatically translate learning objects such as educational videos, source documents, presentation files, worksheets, etc. developed in any language and assessment objects such as exams into many languages. Apart from all these global MOOC platforms, it would not be wrong to say that many countries and organizations are also taking initiatives in this field.

The first of these examples is the "Electronic Platform for Adult Learning in Europe - EPALE" platform, which was launched in 2014 by the European Union, which conducts important studies on adult education (Brakoniecki et al., 2022). The platform is a multilingual and open membership community of adult education professionals, including adult educators, researchers, guidance and support staff, and policy makers (EPALE, 2024). Funded by Erasmus+, the platform is part of a strategy to promote more and better learning opportunities for adults. The platform includes face-to-face and online course catalogs, with courses and events provided by external data sources. In this way, the platform functions as an index of content for adult education. Since course content is created from different providers, there is no unity in terms of method and practice. It is aimed at adult educators, researchers and academics rather than being a structure for learners in the field of adult education.

Another example is the Distance Education Gateway platform launched by the Human Resources Office of the Presidency of the Republic of Türkiye as a national solution. The system, which is a domestic and national digital education platform prepared by taking into account the needs of public employees, includes over 36 thousand learning objects and thousands of course content in different categories, and since its establishment, approximately 3 million adults have watched over 550 million educational content (Uzaktan Eğitim Kapısı, 2024). Although the system has been opened to the access of public employees, any adult with the status of a public employee can enroll in any of the courses registered in the system and complete the process. In this respect, the platform has the status of a MOOC provider. When the number of users and educational interactions of the system are analyzed, it is seen that educational technologies are important for the trainings planned for adult public employees to meet millions of people.

CONCLUSION AND DISCUSSION

MOOCs are one of the most promising educational technologies in the field of adult education. According to Class Central (2024), there are 262K MOOC courses and 833M trainees

worldwide, almost half of the registered users and a third of the courses are technology-related courses, with 58.5% of the courses in English, 8.3% in Portuguese, 7.9% in Spanish and 3.8% in Turkish. With less than 15 years of history, the numbers achieved today for MOOCs are extraordinary. Adapting to the changing world has become more important than ever for human beings. In order to choose and use the technologies applied in this process in the most accurate way, the balance and harmony of the theoretical and practical stages are extremely important. The concept of learner has great responsibilities in adult education. For this reason, many parameters such as the learner's epistemological beliefs (Schommer, 1994), motivation and readiness levels, technological literacy levels, past learning experiences, and personal beliefs about what knowledge is and is not and how learning takes place gain importance. In many of the current adult education technologies, it is seen that the contents prepared by considering mass needs rather than individual needs are gaining intensity. This situation pushes adults who feel the need to manage their own learning process with their own learning responsibility to use the learning environment and content without personalizing it. It would not be wrong to say that this is the biggest handicap of existing MOOCs. At this point, it is extremely important that the content and learning environment can be personalized according to individual needs in adult education. This will only be possible if the learning objects created in a fragmented structure can be combined to form a learning whole and customize the content according to the learner's characteristics. The models in which the learner can participate more actively in the educational process, which are called cMOOC rather than xMOOC, come to the fore. Of course, the creation and management of tools with increased interaction will not be very easy, especially in mass education given to thousands or even millions of people.

Despite the enormous opportunities of using MOOCs in mass adult education, they have been criticized for their weaknesses in terms of student-instructor participation and social networking, and their integration inconsistencies in creating an adaptive online environment (Castellanos-Reyes, 2021). At this point, developing artificial intelligence technologies appear as an important opportunity. These technologies will enable the language transformation of a developed MOOC content and thus expand its target audience. By analyzing the learner characteristics, it will be able to determine the learning style of the adult and select the learning content accordingly. At the same time, it will be able to reconstruct the learning content on an individual basis in accordance with the level of prior knowledge. Although these are issues that have been discussed and debated in the field of educational technologies for many years, it is perhaps the first time that artificial intelligence has become so accessible in its current form. Existing MOOC platforms are known to be working to implement these and similar processes. For example, automatic generation of transcripts of videos and their language conversions are already being done. Analyzing the most watched sections of the videos by users or dividing the videos into sections and creating sub-sections in a single video are also used in existing systems.

At this point, the level of knowledge of adult educators in terms of processes and technologies is extremely important. It is also known that adult educators are not at sufficient levels in the use of technology both in theory and practice (CE, 2020). In order to achieve the highest efficiency in educational technologies, technology usage skills are extremely important for both the learner and the teacher. Both parties need to have sufficient skills in using the relevant technologies. For this reason, in the European Commission (2020) Achievements under the Renewed European Agenda for Adult Learning report, this situation is also clearly stated in the commentary on what needs to be done in the future of adult education. The report recommends measures and investments to increase the technological literacy levels of adult educators and adults.

Considering the number of MOOC platforms, courses and trainees and the investments made in this technology, it is obvious that MOOCs will be the subject of many researches in the future. In order to make the most of the usual opportunities, studies on theory-practice models, especially in the theoretical dimension, will gain importance. With the increasing integration of artificial intelligence techniques into MOOC processes, it will be easier to produce personalized learning environments and the interest in this technology will increase even more.

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