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ANALYSIS OF SUPPLY AND DEMAND FOR ADULT EDUCATION PROGRAMS IN THE EUROPEAN UNION

Abstract: *Adult education in the European Union is a crucial element in the development of human resources and in enhancing competitiveness in the labor market. This paper analyzes the supply and demand for adult education programs in the EU, identifies key trends, challenges, and opportunities, and provides recommendations for the improvement of these programs. Through a review of the literature, data analysis, and case studies from several member states, this paper demonstrates how adult education contributes to social inclusion, economic development, and the improvement of population competencies. The conclusions suggest that further investment and adaptation of educational policies are necessary to ensure the accessibility and quality of education for all adults in the EU.*

Keywords: *adult education, lifelong learning, labor market, skill development, educational policies.*

INTRODUCTION

The supply and demand for adult education programs in Europe play crucial roles in improving the skills and competencies of the population, which is particularly important in the context of ongoing changes in the labor market and social challenges. Adult education contributes to social inclusion, economic stability, and personal development by providing individuals with the opportunity to acquire new skills, retrain, and engage in continuous professional

development. This paper analyzes the supply and demand for adult education programs in Europe, with a special emphasis on key initiatives, trends, and challenges.

Adult education in the European Union faces numerous challenges but also offers significant opportunities for the development of key competencies essential for progress and success in the labor market. Key initiatives and strategies have already been established, but additional investments and adjustments are necessary to ensure accessibility and quality education for all adults. Increasing active participation in adult education is crucial for social inclusion and economic development in Europe.

Adult education is a key component of the European Commission's lifelong learning policy and includes formal, non-formal, and informal learning aimed at improving basic skills, acquiring new qualifications, enhancing skills, and acquiring new skills for more successful employment. The demand for adult education is growing, and the European Commission, with its goals of creating competitiveness and employability, social inclusion, active citizenship, and personal development, is leading the way in enabling the creation of a more successful adult education system by the member states of the European Union.

The main characteristics of a successful adult education system, according to the European Commission, are: flexibility, high quality, excellent teaching, and an improved role for local authorities, employees, social partners, citizens, and cultural organizations. The Council of the European Union made a Recommendation of 19 December 2016 on new opportunities for adult education, specifies three levels of training: skills assessment, learning offer, and evaluation and recognition. Skills assessment enables participants to identify existing competencies they already have and the potential need to improve them. The learning offer is tailored to the needs of the participants to provide them with flexible and quality education and training, while the evaluation and recognition of newly acquired skills allow participants to use them in the labor market or for further studies.

The European Commission has continued to monitor the development of adult education programs by establishing key competencies in lifelong learning, the most important of which are: literacy competence, multilingual competence, mathematical competence, and competence in science, technology, and engineering, digital competence, personal and social competence, learning-to-learn competence, citizenship competence, entrepreneurial competence, and cultural awareness and expression competence (European Union, 2016).

Reports like the one for 2021 published by the Eurydice network (2022) provide insight into the field of adult education and training in Europe, analyzing approaches to promoting lifelong learning and policies and measures that enable greater access to education for adults with lower qualification levels. These reports, which include data from organizations such as Eurostat

and Cedefop, enable policymakers to make quality decisions that contribute to the development of adult education. Adult education encompasses all forms of learning that adults undertake after completing formal education. According to the theory of adult education developed by Malcolm Knowles, it differs from that of children's education (Peterson & Ray, 2013). This can include formal, non-formal, and informal learning. Formal adult education refers to structured programs leading to recognized qualifications such as diplomas or certificates. Non-formal learning encompasses educational activities that are not formalized, such as seminars, workshops, and courses, while informal learning involves learning that occurs in everyday activities and experiences without formal structure or assessment. The goal of adult education is to improve basic skills, acquire new qualifications, and develop personal and professional competencies (Eurydice, 2022).

Adult education plays a key role in social and economic development. It increases employability, enhances skills needed to adapt to changes in the labor market, and fosters personal development. This paper aims to analyze the current supply and demand for adult education programs in the European Union, identify key trends, challenges, and opportunities for improving these programs. The research will provide recommendations for policymakers and educational institutions to improve access and quality of adult education. The key objectives of the research are:

- Understanding the current state of adult education in various EU member states
- Identifying the demographic characteristics of participants and their educational needs
- Analyzing successful models and practices in adult education
- Providing recommendations for improving policies and programs in adult education.

THEORETICAL FRAMEWORK

A review of the literature on adult education in Europe reveals a wealth of research addressing various aspects of this topic. For this research, newer sources were selected. Adult education has become a critical issue in many European countries due to its role in promoting lifelong learning (Phyu Thwe & Kálmán, 2024), increasing economic competitiveness (Kesner-Škreb, 2007), and fostering social inclusion (Kersh et al., 2021). The European Association for the Education of Adults (EAEA) annually publishes country reports on the state of adult education in Europe. The latest available report is for 2021 for 44 countries (EAEA, 2024^a). The same organization provided predictions in 2019 in the document *The Future of Adult Learning in Europe – Background paper* (EAEA, 2024^b). Furthermore, in the context of adult education and as

an important source of information, the Eurydice information network on education, funded by the European Commission and established in 1980, plays a crucial role. Its primary goal is to provide up-to-date and reliable information to policymakers in the European Union and other participating countries about educational systems and policies. The network consists of a European coordination unit and several national units located in the ministries of education of member countries. Eurydice publishes detailed descriptions of national education systems, comparative studies on specific educational topics, and statistical data, supporting evidence-based decision-making in the field of education. It covers all levels of education, from preschool to higher education and adult education. The network also plays a key role in promoting European cooperation in education by sharing information and best practices among member states. Recently, the network expanded to include national units from Georgia, Moldova, and Ukraine, reflecting its commitment to building a more inclusive and connected educational space across Europe (Eurydice, 2024^{a, b, c, d}). The publication *The Right to Lifelong Learning: Why Adult Education Matters*, released by UNESCO (2023), highlights the critical importance of adult education for social and economic development. Adult education not only enhances individual skills and knowledge but also promotes inclusion, reduces inequalities, and supports sustainable development. Through lifelong learning, adults can adapt to rapid changes in the labor market, improve their social and economic opportunities, and actively participate in society. This source emphasizes that the right to lifelong learning is a fundamental human right that contributes to strengthening democratic values and social cohesion. From the perspective of the United Nations' Sustainable Development Goals (SDGs) (United Nations, 2024), UNESCO's Institute for Lifelong Learning underscores the importance of adult education as a key component of lifelong learning. Adult education helps individuals to actively engage in society and the work environment, thereby contributing to the achievement of sustainable development goals. This source highlights the need for continuous learning to address global challenges, including climate change and digitalization, and calls for greater commitment to adult education policies at a global level. Among the scholars who have a professional interest in the subject matter, it is essential to mention Stephen Brookfield (2018), who analyses two main traditions of critical analysis that have shaped the theory of adult education: Marxism and the critical social theory of the Frankfurt School, as well as critical pedagogy associated with Paulo Freire. He also examines the impact of transformative learning theories, feminist theory, queer theory, Afrocentric theory, and critical race theory on adult education. His work helps in understanding how theory can contribute to dismantling power structures by criticizing the ideologies that sustain them. In their work *The Critical Turn in Human Resources Development*, Rocco et al. (2018) explore how various critical theories have created space

for the critical development of human resources (HRD) and how critical race theory is leading HRD in a more radical direction. Their work provides insights into how critical theory can be applied to human resource development, emphasizing the importance of combating inequalities and promoting social justice in the work environment. Brown and Bimrose (2018) emphasize the importance of workplace learning in relation to identity development. They map changes in ideas about identity development at work and present two models of learning that support identity development in the workplace. Their work helps in understanding how professional development and learning can contribute to shaping work identity. Authors Boyadjieva and Ilieva-Trichkova (2018) explore the heuristic potential of the capabilities approach in conceptualizing lifelong learning and test its empirical value. Drawing on the work of Amartya Sen and Martha Nussbaum, they develop an index of equity in adult education participation and explore barriers to participation. Their work contributes to understanding how lifelong learning can be a process of emancipation and social justice. Lange (2018) explores how education for sustainability can move from empty rhetoric (“sustainababble”) to meaningful societal change. Her research focuses on education, which transforms social structures to achieve sustainability, emphasizing the role of education in achieving sustainable development goals (SDGs).

METHODOLOGY

This research used a combination of quantitative and qualitative methods for data collection and analysis. Quantitative data were collected from existing databases such as Eurostat and Cedefop to identify key trends and statistical data on adult education in the EU. The qualitative analysis was based on case studies from several member states and a review of the relevant literature. Data analysis included descriptive statistics, comparative analysis, and trend analysis to identify key patterns in the supply and demand for adult education. The qualitative analysis focused on identifying successful models and practices as well as understanding challenges and barriers in adult education. The synthesis was based on the integration of findings for a comprehensive insight into the state of adult education in the EU and providing recommendations for improving policies and practices in adult education based on the research findings.

RESULTS AND DISCUSSION

Current state of adult education programs in the eu

The supply of adult education programs in Europe encompasses various forms of learning that allow adults to acquire new skills, enhance existing competencies, and increase their employability. These programs can be formal,

non-formal, and informal, each with its specific characteristics and goals. This section will analyze different aspects of the supply of adult education programs in the European Union, with a particular focus on examples from several member states.

Formal adult education includes structured programs leading to recognized qualifications such as diplomas, certificates, or other forms of accreditation. These programs are often organized by universities, vocational schools, and other educational institutions. Through formal education, adult learners can acquire new professional qualifications or improve existing qualifications. Informal adult education refers to unintentional and unsystematic learning that occurs through daily activities and experiences. This can include self-directed learning, learning through work tasks, social interactions, and other forms of informal knowledge acquisition. Research shows that informal learning plays a key role in developing practical skills and knowledge that adults use in everyday life. For example, digital literacy is often acquired through the daily use of computers and the internet without formal training (Illeris, 2014). In many European countries, informal learning is recognized as an essential element of lifelong learning. Non-formal adult education also plays a significant role in lifelong learning. Non-formal adult education normally includes organized activities outside the formal educational framework, such as workshops, community training programs, and online courses. These programs are tailored to the needs of adult learners and often focus on specific skills or knowledge areas, such as digital literacy, vocational skills, or personal development. Non-formal education provides a flexible and accessible pathway for adults to acquire new competencies without committing to formal qualifications. National and EU-level policies and initiatives often promote the value of informal learning and its integration into formal and non-formal education systems (Merriam & Brockett, 1996, p. 173–179). The European Union has several key policies and initiatives that support adult education. One of the most significant strategies is the Europe 2020 strategy, which emphasizes the importance of lifelong learning for achieving economic growth and social cohesion. This strategy promotes flexible and inclusive education systems that enable access to education for all citizens, including adults (EAEA, 2024^b). Another significant initiative is the Erasmus+ program, which provides financial support for educational projects and mobility for adult learners. This program allows adults to participate in various types of educational and professional training across Europe, gaining new knowledge and skills (Erasmus+, 2024^a).

Successful models and practices in adult education

One of the key examples of formal adult education is the *Volkshochschulen* (VHS) system in Germany. *Volkshochschulen* are public institutions offering

a wide range of educational programs, including basic education, secondary school diplomas, vocational courses, and university preparatory programs. These institutions play an essential role in Germany's lifelong learning system, enabling adults to continuously improve and adapt to changes in the labor market (Hinzen & Meilhammer, 2022). In Sweden, municipal adult education systems (*Komvux*) provide similar opportunities. Municipalities organize programs at various education levels, from basic to higher secondary education, allowing adults to acquire the necessary qualifications for the labor market or further education (Eurydice, 2024⁸). In Finland, adult education is integrated into the broader education system, with a particular emphasis on flexibility and the individual needs of learners (Eurydice, 2024⁹). The curriculum is often adapted to match the working conditions and life situations of participants. Adult education in Finland includes various levels and forms of learning, including formal, non-formal, and informal learning. The goals of adult education policy are to ensure the availability and competence of the workforce, provide educational opportunities for all adults, and strengthen social cohesion and equality. Liberal adult education offers many opportunities for personal development without obtaining qualifications or professions. Finland has a long tradition in adult education, focusing on adapting to the changing needs of working life and society.

In the United Kingdom, adult education encompasses various forms and levels of learning, from vocational courses to higher education. Adults can attend part-time courses, professional qualifications, and undergraduate programs to advance their careers. The Institute for Adult Learning (IAL) and the Workers' Educational Association (WEA) offer affordable courses in local centers and online, supporting adults from different communities, including those without previous qualifications (Higginbotham, 2024). In most European education systems, there are "compensatory" or "corrective" education and training programs associated with the lowest levels of education, primarily aimed at individuals older than the age of compulsory education, such as youth and adults who, for various reasons, did not complete primary education. These programs focus on functional literacy in various areas, including reading, writing, arithmetic, and ICT. These programs usually result in certificates or qualifications necessary for further education within the formal education and training system. What characterizes many compensatory programs is their connection with vocational education and training. While initial education systems at these levels often include only basic general education, re-entry programs often incorporate elements of vocational education and are used to obtain recognized vocational qualifications. Some successful examples of the application of compensatory programs are found in Turkey, Portugal, Greece, Estonia, Romania, Croatia, Slovakia, Serbia, Denmark, Finland, Sweden, and Norway.

In Greece, schools known as *Scholia Deferis Efkerias* offer two-year programs for adults who did not obtain a compulsory education certificate. The same certificate can be obtained by attending three-year evening programs at lower secondary schools (*Esperino Gymnasio*). These programs are designed for adults and minors who are employed. In Portugal, adult education and training programs (*Cursos de Educação e Formação de Adultos*) cater to four, six, nine, and twelve years of schooling, with the level of qualification achieved depending on the program. (Eurydice, 2024^h). In Turkey, it is possible to complete lower secondary education within the system of open lower secondary education (*Açık Öğretim Ortaokulu*) (VHS^{ab}, 2024). In Estonia, second-level vocational education (*2. taseme kutseõpe*) is intended for students aged 17 and older who have not completed primary education. This program allows the acquisition of vocational qualifications and can be combined with general-oriented “basic education for adults” (*põhiharidus Täiskasvanutele mittestatsionaarses õppevormis*) (Eurydice, 2024ⁱ).

In Croatia, the adult education curriculum is divided into six educational periods of 18 weeks each. Upon completion of the program, participants can enroll in basic vocational training programs lasting 150 hours (Eurydice, 2024^j). In Romania, participants in the “doua sansă” program who obtain a certificate have the right to continue their education at a higher level. It is also possible to attend 720 hours of practical training, and successful participants receive a third-degree vocational qualification certificate (Eurydice, 2024^j). In Slovakia, adults who have not completed lower secondary education can attend two-year vocational education programs with a strong practical component. Although these programs do not directly allow access to higher secondary education, successful participants receive a certificate of completion of the final exam and a vocational certificate. After an additional formal lower secondary education completion program, participants can attend higher vocational school programs (Eurydice, 2024^k).

In Serbia, functional primary education for adults is an official educational program organized into three cycles lasting from three to five years. The content includes eight hours of regular integrated primary and lower secondary education. The first two cycles focus on general education, while the third cycle combines general and vocational education (Eurydice, 2024^l). In Denmark, the general adult education system (*almen voksenuddannelsen*) is intended for individuals aged 25 and older. The content is the same as the curriculum in primary and lower secondary school (*folkeskole*). Single-subject programs can be attended separately or together and conclude with general preparatory exams for adults. These exams enable access to programs with higher preparatory exams (Eurydice, 2024^m).

In Finland, basic education for adults (*aikuisten perusopetus*) is intended for students completing primary education after the age of compulsory schooling.

Participants can study individual subjects (e.g., languages) as “students of that subject” or prepare for exams in multiple subjects that meet the requirements for attending general upper secondary education (Eurydice, 2024^o). In Sweden, municipal basic education for adults (*komvux grundläggande nivå*) programs correspond to those in compulsory school education (from 1 to 9 years), but the content and educational program are adapted for adults. Participants who achieve at least a passing grade in four basic subjects – Swedish or Swedish as a second language, English, mathematics, and social studies – are awarded a certificate of completed education (Eurydice, 2024^o).

In Norway, individuals aged 23 and older with at least five years of work experience can participate in a general upper secondary education program for adults (*videregående opplæring studieforberedende utdanningsprogramme*), which lasts one year (instead of three years as in the initial education system). The program consists of six courses corresponding to general education (Norwegian, English, mathematics, science, social studies, and history) (Eurydice, 2024ⁿ).

Some countries do not have specially designed upper secondary education programs for adult participants, such as Bulgaria, the Czech Republic, Romania, Slovakia, and Iceland. In these countries, upper secondary education (general or vocational) takes place in various flexible arrangements, including part-time or evening programs. Programs are available to all participants who are no longer in compulsory regular education. On the other hand, several countries have developed qualification systems that complement the regular education system. The qualifications covered by these systems usually involve a lighter workload, making them a more accessible option for adults, including those with limited prior formal education.

In addition to educational and training opportunities leading to recognized qualifications, state authorities subsidize other types of educational programs, including those that can help adults improve their basic skills. These programs consist of courses led by various education providers and are less structured than programs leading to recognized qualifications. There are also certain differences between programs leading to recognized qualifications and non-formal basic skills programs. The first type of program is conducted mainly in public educational and training institutions focused on adult education or in state schools that provide initial education and training for young people. The second type of program is conducted in public or private institutions for adult education and training.

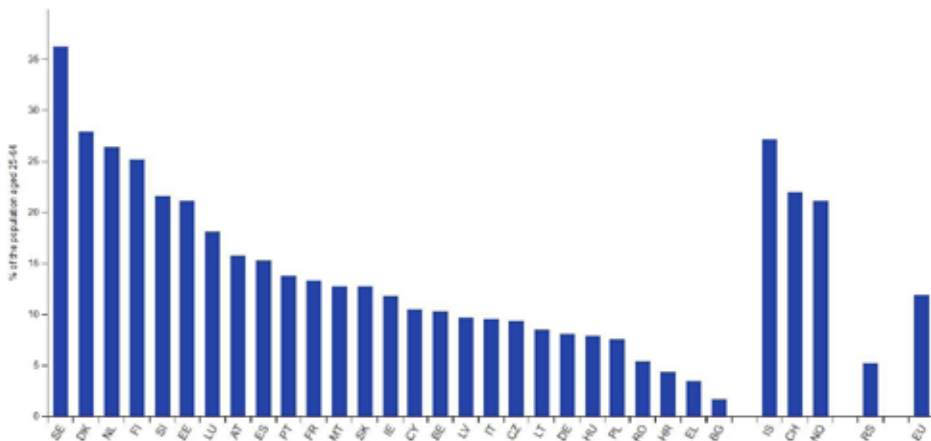
Challenges and barriers to adult education

The demand for adult education in Europe is growing due to various economic, social, and technological factors. This increase in demand reflects

the need for the continuous acquisition of new skills and knowledge so that adults can adapt to changes in the labor market and improve their personal competencies. This section analyzes the demographic characteristics of participants, motives, and needs for adult education, as well as the impact of the labor market on the demand for this education. The demographic characteristics of the adult education participants in Europe show significant diversity. According to Eurostat (2024), adult education attracts a wide range of individuals of different age groups, educational levels, and professional backgrounds. In most EU countries, participants are primarily aged 25 and older, but a significant number of younger adults engage in educational programs to improve their qualifications or retrain for new careers. According to the same source, in 2022, as shown in Figure 1, an average of 11.9% of people aged 25 to 64 years in the European Union participated in education or training in the previous four weeks, which is an increase of 2.8 percentage points compared with 2020. The highest participation rates were recorded in Sweden (36.2%), Denmark (27.9%), the Netherlands (26.4%), and Finland (25.2%), while the lowest rates were reported in Greece and Bulgaria. Women had a higher rate of participation in adult education than men did in all EU member states except Romania and Slovakia.

Figure 1.

Adult Participation in Education in the EU in 2022



Source: Eurostat, 2024.

The motives for engaging in educational programs among adults are numerous and varied. According to Kesner-Škreb (2007), economic motives play a crucial role, as adults seek education to improve their employment

opportunities and advance in their careers. In this context, the need to acquire new skills, retrain, and enhance existing competencies becomes increasingly important. EU member states are expected to invest in education and skills development and implement active employment measures, all in the pursuit of a knowledge-based society.

Social motives also play a significant role. Adult education contributes to social inclusion by enabling individuals from marginalized groups to acquire the skills and knowledge necessary for active participation in social and economic life. For example, language learning programs for immigrants or digital literacy courses for older adults contribute to their social integration and improve their quality of life (Kersh & Laczik, 2021). Personal development and fulfillment are additional motives. Many adults engage in educational programs to satisfy their curiosity, develop new hobbies, or simply enjoy the learning process. This type of motivation is particularly present in non-formal education, where courses often cover topics such as art, cooking, gardening, and other personal interests (Jarvis, 2004, pp. 16–33, 77).

The labor market has a significant influence on the demand for adult education. Changes in the economy, technological advancements, and globalization increasingly demand that the workforce adapts to new conditions. This requires continuous acquisition of new skills and knowledge. According to A.G. Watts (2010) in his review of *Learning through Life: Inquiry into the Future for Lifelong Learning* by Schuller and Watson (2009), lifelong learning and the acquisition of new skills are framed as essential factors for maintaining competitiveness and productivity in the workforce. Watts highlights that the study introduces a strategic framework for lifelong learning in the United Kingdom over the next 10–15 years, identifying four key stages in the life cycle: up to 25 years, 25–50 years, 50–75 years, and over 75 years. This model emphasizes extended transitions for youth, prolonged participation in the workforce, and adapting to an increased lifespan, with a focus on ensuring that skills are not only acquired but also effectively utilized for sustainable economic and societal benefits.

One of the key findings is that it is necessary to increase investment in adult learning to ensure the adaptability of the workforce to rapidly changing market conditions. Workers who fail to acquire new skills and adapt to new technologies and work methods face risks such as reduced employment opportunities and career stagnation. On the other hand, acquiring new skills and continuous education enables workers not only to retain their jobs but also to advance in their careers, contribute to greater innovation within their organizations, and maintain their relevance in the labor market.

The key elements of the proposed strategy include the introduction of personal learning accounts, allowing adults to manage their education from the age of 25 onwards, and the creation of a strong infrastructure for guidance

and support in learning, helping individuals identify their educational needs and opportunities. Failing to recognize the need for continuous learning and not adapting to new conditions represents a significant risk for individuals and the economy as a whole. The digital revolution, for example, has led to significant changes in the labor market, creating a demand for new skills, such as digital literacy, data management, and programming. Many adults are opting for courses and training that enable them to acquire these skills and remain competitive in the labor market.

In addition to technical skills, the labor market also requires soft skills, such as teamwork, communication, and problem-solving. These skills are crucial for success in modern work environments and are often part of adult education programs. Adult education programs frequently include group projects and tasks that help participants develop teamwork skills. These skills are essential for effective collaboration in professional environments and increase the chances of employment and career advancement. Communication skills are also often included in the adult education curriculum, as they are key to successfully leading meetings, presentations, and day-to-day interactions in the workplace. Role-playing scenarios and case studies that simulate real-world problems from the work environment are also gaining importance. These tasks allow participants to apply learned skills in a controlled environment and develop strategies for effectively solving problems (Field, 2005, pp. 15–29). These components are critical for improving workforce competencies and increasing their competitiveness in the labor market. Effective adult education programs not only enhance individual skills but also contribute to greater productivity and innovation within organizations.

The demand for adult education varies between different regions in Europe. These differences are often the result of various economic, social, and cultural factors, as well as differing levels of institutional support and adult education policies. Below, some key examples from different European countries are discussed.

In Germany, there is a long-standing tradition of lifelong learning, supported by a strong institutional framework. The *Volkshochschulen* (VHS) or Public Adult Education Centers play a key role in providing educational programs for adults. These institutions offer a wide range of courses, including language classes, information technology, business skills, arts, and health. This diversity allows adults to find programs that meet their needs and interests. Government support through funding and policy ensures a high level of accessibility and participation in adult education (Eurydice, 2022). In Scandinavian countries like Sweden, Norway, and Denmark, a similar approach is observed. These countries have strong social welfare systems and a high level of economic support for adult education. For example, Sweden offers educational programs through municipal adult education systems that allow citizens to acquire new

skills or retrain for new careers. These programs are often free or subsidized, increasing their accessibility (Eurydice, 2022).

In contrast, Italy and Spain show lower demand for adult education. This is partly due to socio-economic factors such as higher unemployment rates and lower levels of public spending on adult education. Additionally, the lack of institutional support can make access to adult education programs more difficult. However, there is a growing interest in adult education in these countries, especially in sectors affected by economic changes. For example, in Spain, programs for learning languages and courses focused on digital skills and IT competencies are becoming increasingly popular. These programs are often organized by private institutions and non-governmental organizations that fill the gaps left by a lack of state support. In Spain, research titled *Social and Territorial Cohesion in Spain: Relevance of the Socioeconomic Context* (Faura-Martínez et al., 2020) highlights the importance of adult education in the context of social cohesion and territorial equity. Adult education is recognized as a key component in combating social exclusion and inequality. This study analyzes factors such as income, employment, education, health, housing, social and family relationships, and participation, showing that education plays a vital role in improving social mobility and quality of life. The authors emphasize that high levels of social exclusion are associated with low levels of education, which further complicates employment opportunities and economic stability. Adult education provides opportunities to acquire new skills and retrain, which is especially important in the context of economic crises and rapid labor market changes. Adult education programs help individuals adapt to new labor market demands, thus reducing the risk of social exclusion. The importance of adult education is also linked to the need for social inclusion, allowing marginalized groups access to educational opportunities that can improve their socio-economic status. For example, digital literacy programs and language learning for immigrants contribute to their integration into society and increase their employment opportunities.

In Central and Eastern European countries such as Poland, Hungary, and the Czech Republic, adult education systems are growing but face different challenges. Economic transitions and labor market reforms require the workforce to adapt to new conditions, which increases the demand for adult education. However, a lack of financial resources and institutional support may limit the accessibility and quality of these programs. Lower demand, driven by economic challenges and limited resources, raises interest in education as a means of achieving social mobility.

IMPLICATIONS FOR POLICY AND PRACTICE

According to the OECD (2024), the following recommendations are provided for improving adult education in less developed regions:

1. Increase financial support: Provide more scholarships, subsidies, and free programs for adults, especially those from socio-economically disadvantaged groups. This measure can significantly increase access to adult education, which is key to empowering individuals and improving their professional and personal opportunities.
2. Develop local initiatives: Encourage local communities to develop and implement educational programs that meet the specific needs of the local population. Local approaches can be more effective in addressing specific challenges and needs, resulting in better educational outcomes (Erasmus+, 2024^b).
3. Improve infrastructure: Invest in educational infrastructure, including digital resources and technologies, to enable broader access to educational content. The digitalization of education can allow more flexible learning, especially for adults who balance education with work and family obligations (European Commission, 2024).
4. Collaborate with the private sector: Increase cooperation between governments, non-governmental organizations, and the private sector to develop programs that meet the needs of the labor market. The private sector can provide valuable resources and expertise to develop adult education programs that are relevant to labor market demands (Erasmus+, 2024^b).
5. Raise awareness: Organize awareness campaigns about the importance of lifelong learning and adult education to motivate more adults to engage in educational activities. Promoting positive examples and the benefits of adult education can encourage more people to participate in educational programs (EPALE, 2024).

This section contains an analysis of specific adult education programs in several European Union member states, along with an analysis of the results and effects of these programs. The aim of these case studies was to demonstrate how different approaches can contribute to the success of adult education.

In Germany, *Volkshochschulen* (VHS) or public adult education centers are key elements of adult education in Germany. These institutions offer a wide range of educational programs, including language courses, IT skills, arts, crafts, and civic education. Established to provide accessible and high-quality education to all citizens, regardless of their prior educational or social background, these centers have become central to Germany's adult education system. VHS centers are supported by local governments, federal states, and the federal government, providing stable funding and broad accessibility to

programs. Each VHS is an autonomous institution that adapts its programs to local needs, but all centers follow national guidelines that ensure high quality in education. In addition to basic funding, VHS centers also rely on fees paid by participants, although these fees are often subsidized to ensure accessibility. According to the report from the Federal Institute for Vocational Education and Training (BIBB), more than 6 million people participate in VHS programs each year, making these centers the largest providers of adult education in the country (BIBB, 2021). The role of VHS is not only to teach practical skills but also to promote social inclusion and active citizenship. They enable people of all ages and social classes to improve their skills and knowledge, contributing to their personal development and professional advancement. The range of courses offered by VHS centers is broad. Language courses are among the most popular, as they allow participants to improve their linguistic skills, which are essential for employment and integration, particularly for immigrants. IT courses are also important as they help participants adapt to the digital world and increase their employability. Additionally, VHS offers creative courses such as arts and crafts, which contribute to personal satisfaction and cultural enrichment. One of the key factors in the success of VHS centers is their accessibility. Centers are located in almost every city and major town in Germany, allowing the majority of the population easy access to educational programs. Additionally, many courses are designed for working adults, with classes held in evenings or on weekends. The quality of education in VHS centers is highly regulated. National guidelines and standards ensure that all courses meet certain quality criteria, and that instructors are usually highly qualified experts in their fields (BIBB, 2024; EAEA, 2024^b).

In Sweden, *Komvux* Program – Komvux, which stands for *Kommunal vuxenutbildning* or Municipal Adult Education, is a key program for adult education in Sweden. This program offers a wide range of courses tailored to the needs of adult learners, enabling them to improve their education, acquire new skills, or retrain for different careers. Komvux programs are specifically designed to provide flexibility in learning, which is extremely beneficial for those who are already working or have other obligations. The Komvux program is funded by municipalities with government support. This combination of funding ensures the wide availability and affordability of courses for all adult citizens. Each municipality organizes and manages its Komvux program, adapting the range of courses to the specific needs of the local population. Courses include basic and secondary education, vocational and technical skills, and programs for students with special needs. According to a study conducted by the Swedish National Agency for Education (Skolverket, 2024), about 60% of participants complete their courses, confirming the high efficiency of the Komvux program. Many of these participants use their newly acquired qualifications to advance their careers or access higher education. One of the

key factors in the success of the Komvux program is its flexibility. Courses are often offered in the evenings or online, allowing learners to balance education, work, and family responsibilities. This flexibility is particularly important for working adults who want to improve their education or acquire new skills without giving up their professional and personal commitments. The success of the Komvux program is reflected in the fact that 60% of participants successfully complete their courses, improving their professional qualifications and increasing their chances of employment (Skolverket, 2024).

In Spain, *Centros de Educación de Adultos* (CEA) are key institutions for adult education. These centers provide educational programs tailored to the needs of adult participants, particularly focusing on marginalized groups and those with lower educational levels. CEA centers offer a wide range of courses, including basic and secondary education, vocational training, and language courses, all aimed at improving employability and fostering social inclusion. CEA centers are supported by regional and local authorities, with additional support from the national government through the *Ministerio de Educación, Formación Profesional y Deportes* (MEFPD). This combination of funding ensures accessibility and quality in adult education for all citizens. Each region tailors its programs to the specific needs of the local population, ensuring that the courses offered align with labor market demands and the needs of participants (MEFPD, 2024). According to a study by the MEFPD (2024), the programs offered by CEA centers have significantly contributed to reducing unemployment rates among adult participants. The study highlights that these programs have reduced the unemployment rate among participants by 15%, demonstrating the high effectiveness and relevance of these educational initiatives in improving employability. CEA centers are widely distributed throughout Spain, providing easy access to educational programs for most of the population. Courses are often flexible, with evening and online options, allowing participants to balance education, work, and family commitments. The quality of education in CEA centers is ensured by skilled instructors and modern teaching methods, which guarantee the relevance and effectiveness of the courses (Eurydice, 2024^p).

In Poland, Adult Education Initiatives include a wide range of programs and initiatives designed to improve the skills and qualifications of adult learners. These programs are designed to meet labor market needs and support the concept of lifelong learning, enabling adults to improve their professional and personal skills. Adult education in Poland is organized by various institutions, including public schools, higher education institutions, and private educational centers. The programs are funded from the state budget, European Union funds, as well as local sources. This funding system enables the wide availability and accessibility of educational programs for all adult citizens, regardless of their prior educational or social backgrounds. According to the laws and policies

adopted in Poland and the EU, the following terms are used about adult education and training: Continuing Education (CE) (*kształcenie ustawiczne*), defined in the School Education Law (*ustawa Prawo oświatowe*) (Article 4, Section 30). CE refers to education/training in adult schools, second-degree sectoral vocational schools, and post-secondary schools, as well as acquiring new and supplemental knowledge, skills, and professional qualifications in non-school environments for individuals who have completed compulsory education. Adult Education (AE) (*edukacja dorosłych*) is used as an equivalent for Adult Education and Training (AET) (*kształcenie i szkolenia dorosłych*). AET is provided both as practical training at the workplace and as organized activities by civic groups or communities. According to Eurydice, adult education programs in Poland play a key role in reducing social exclusion and improving employability. These programs allow participants to acquire new skills and qualifications that are in demand in the labor market, thereby contributing to their professional development and economic advancement. Adult education programs in Poland are designed to be accessible and flexible, tailored to the needs of adult learners. Courses are often offered in the evening and online, which, as in other countries, allows participants to balance education, work, and family obligations. Additionally, many programs offer the possibility of recognizing prior learning and experience, which accelerates the process of acquiring new qualifications (Statistics Poland, 2024; Eurydice, 2024^b).

THE SYNTHESIS OF FINDINGS AND RECOMMENDATIONS FOR IMPROVING POLICIES AND PRACTICES IN ADULT EDUCATION

The research findings on the supply and demand for adult education in the European Union highlight significant differences between member states, as well as common challenges and opportunities for improving the adult education system. This discussion analyzes key findings, identifies areas that require further attention, and provides recommendations for improving educational policies and practices.

Key findings

Differences in the accessibility and quality of educational programs were detected. Case studies have shown that countries with well-developed adult education systems, such as Germany and Sweden, have high participation rates and a wide range of quality programs. In Germany, the *Volkshochschulen* (VHS) system provides a wide array of courses, from language learning to IT skills, allowing adults to improve their competencies and increase employability. In Sweden, Komvux programs offer flexible learning opportunities, which are key to the high success rate of participants.

On the other hand, countries like Italy and Spain face lower participation rates due to socioeconomic factors and a lack of institutional support. Economic motives, such as increased employability and career advancement, are primary factors motivating adults to engage in educational programs. Studies show that adults who participate in educational programs have a better chance of finding employment and advancing in their careers. Social motives, such as inclusion and personal development, also play a significant role, especially for marginalized groups, who, through education, acquire the necessary skills for active participation in society.

The labor market is rapidly changing due to technological advancements and globalization, creating a need for continuous learning and adaptation to new skills. Digital skills, such as data management and programming, are increasingly important, and adult education programs often include courses that meet these needs. Soft skills, such as teamwork and communication, are also crucial for success in the modern workplace and are often integrated into adult education programs.

The demand for adult education varies across Europe's regions. Countries with a strong tradition of lifelong learning, such as Germany and Scandinavian countries, exhibit high participation rates due to strong institutional support and public investment. Conversely, countries like Italy and Spain show lower participation rates due to economic challenges and a lack of support for adult education programs.

Identification of shortcomings and challenges

In many less developed regions, the lack of financial resources limits access to adult education programs. This is especially true for socioeconomically disadvantaged groups, who do not have the means to participate in education. The lack of specialized institutions for adult education and inadequate infrastructure hinders the implementation of effective educational programs. Many countries do not have sufficiently developed institutional frameworks that would allow broad access to adult education. The lack of digital infrastructure and technology presents a significant challenge, particularly in rural areas. The digital divide between urban and rural regions limits access to educational resources and prevents the equal distribution of educational opportunities.

Recommendations for improvement

Ensuring a greater number of scholarships, subsidies, and free programs for adults, especially for socioeconomically disadvantaged groups, can significantly increase access to education. Encouraging local communities to develop educational programs tailored to the specific needs of their population can increase the effectiveness of educational initiatives. Investing in digital

resources and technologies can enable broader access to educational content and increase the flexibility of learning, which is especially important for working adults. Increasing cooperation between governments, non-governmental organizations, and the private sector can contribute to the development of relevant educational programs that meet labor market needs. Organizing awareness campaigns about the significance of lifelong learning can motivate more adults to engage in educational activities, increasing overall participation and contributing to social inclusion.

CONCLUSION

This research highlights the vital role of adult education in navigating the rapid economic, technological, and social changes facing contemporary society. By analyzing adult education programs across the European Union, it becomes clear that while some member states have developed accessible and high-quality systems, others face significant challenges that hinder participation and outcomes. Countries like Germany and Sweden show how strong institutional support and adequate funding can lead to successful programs that enable adults to enhance their skills and qualifications. On the other hand, countries like Italy and Spain, which face socioeconomic disparities and limited resources, struggle to provide the same level of access. However, the growing interest in adult education in these regions, particularly in fields such as IT and digital skills, suggests a potential for progress if properly supported. These findings also underscore the increasing importance of lifelong learning in today's fast-changing world. The digital revolution has created a demand for skills such as digital literacy, programming, and data management, alongside soft skills such as communication, teamwork, and problem-solving. Adult education not only helps individuals remain competitive in the workforce but also supports broader goals of social inclusion and personal growth, from integrating marginalized groups to promoting active participation in society. To move forward, addressing existing disparities and making adult education systems across the EU more inclusive, flexible, and resilient is essential. While detailed strategies have been outlined earlier in this study, the broader focus should be on ensuring that these efforts lead to meaningful change. By increasing accessibility, fostering collaboration across sectors, and leveraging digital innovation, member states can build a stronger foundation for lifelong learning that benefits individuals and society. Adult education is more than just an economic tool—it is a pathway to empowerment, equality, and progress. By embracing these opportunities and addressing the challenges, the EU can create an education system that prepares its population for the future and supports sustainable growth and development for years to come.

REFERENCES

- Boyadjieva, P., & Ilieva-Trichkova, P. (2018). Lifelong learning as an emancipation process: A capability approach. In M. Milana, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The Palgrave international handbook on adult and lifelong education and learning*. Macmillan Publishers Ltd. https://doi.org/10.1057/978-1-137-55783-4_15.
- Brookfield, S. (2018). Critical adult education theory: Traditions and influence. In M. Milana, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The Palgrave international handbook on adult and lifelong education and learning*. Macmillan Publishers Ltd. https://doi.org/10.1057/978-1-137-55783-4_4
- Brown, A., & Bimrose, J. (2018). Learning and identity development at work. In M. Milana, S. Webb, J. Holford, R. Waller, & P. Jarvis (Eds.), *The Palgrave international handbook on adult and lifelong education and learning*. Macmillan Publishers Ltd. https://doi.org/10.1057/978-1-137-55783-4_14.
- Bundesinstitut für Berufsbildung (BIBB) (lipanj 2021). Data Report 2021, *bibb.de*, https://www.bibb.de/datenreport/en/datenreport_2021.php
- Bundesinstitut für Berufsbildung (BIBB) (lipanj 2024). Participation of individuals in continuing vocational education and training, *bibb.de*, <https://www.bibb.de/en/712.php>
- Deutscher Volkshochschul-Verband (VHS) (lipanj 2024^a). Community Learning in Turkey. *dvv-international.de*. <https://www.dvv-international.de/en/adult-education-and-development/editions/aed-812014-communities/community-learning-in-community-learning-in-turkey>
- Deutscher Volkshochschul-Verband (VHS) (lipanj 2024^b). Adult Education Trends and Issues in Europe. *dvv-international.de*. <https://www.dvv-international.de/en/adult-education-and-development/editions/aed-722009/documents/adult-education-trends-and-issues-in-europe>
- Electronic Platform for Adult Learning in Europe (EPALE) (2024). Erasmus+ for Adult Education, *EPALE – Electronic Platform for Adult Learning in Europe*, *epale.ec.europa.ec*. <https://epale.ec.europa.eu/en/erasmus-adult-education>
- Erasmus+ (lipanj 2024^a). Adult education, *erasmus-plus.ec.europa.eu*. <https://erasmus-plus.ec.europa.eu/opportunities/opportunities-for-organisations/learning-mobility-of-individuals/adult-education>
- Erasmus+ (lipanj 2024^b). Partnerships for cooperation -What are partnerships for cooperation?, *erasmus-plus.ec.europa.eu*. <https://erasmus-plus.ec.europa.eu/programme-guide/part-b/key-action-2/partnerships-cooperation>
- European Association for the Education of Adults (EAEA) (lipanj 2024^a). Country reports, *countryreport.EAEA.org*. <https://countryreport.eaea.org/lander/articles/Adult%20education%20trends%202020>

- European Association for the Education of Adults (EAEA) (lipanj 2024^b). The Future of Adult Learning in Europe. *EAEA.org*. <https://eaea.org/wp-content/uploads/2019/12/The-future-of-adult-learning-in-Europe.pdf>
- European Association for the Education of Adults (EAEA) (lipanj 2024^c). Country Report on Adult Education in GERMANY. *EAEA.org*. https://eaea.org/wp-content/uploads/2018/01/germany_country-report-on-adult-education-in-germany.pdf
- Europska komisija (2021). EACEA – Obrazovanje i osposobljavanje odraslih u Europi – stvaranje uključivih načina stjecanja vještina i kvalifikacija. *Izješće Eurydicea*. <https://op.europa.eu/hr/publication-detail/-/publication/827fcd9c-1a8cdigital-11ec-b4fe-01aa75ed71a1>
- Europska komisija (2024). Digital Education Action Plan (2021-2027), *education.ec.europa.eu*. <https://education.ec.europa.eu/focus-topics/digital-education/action-plan>
- Europska unija (2016). Preporuka vijeća od 19. 12. 2016. o oblicima usavršavanja: nove prilike za odrasle (2016/C 484/01). *eur-lex.europa.eu*. [https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32016H1224\(01\)](https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32016H1224(01))
- Eurostat (lipanj 2024). Adult learning statistics, *ec.europa.eu*, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Adult_learning_statistics
- Eurydice (2022). Obrazovanje i osposobljavanje odraslih, *Europska komisija, Luxemburg – Ured za publikacije EU*. <https://op.europa.eu/hr/publication-detail/-/publication/827fcd9c-1a8c-11ec-b4fe-01aa75ed71a1>
- Eurydice (lipanj 2024^a). Welcome to Eurydice, *Eurydice.com*, <https://eurydice.eacea.ec.europa.eu/>
- Eurydice (lipanj 2024^b). Poland – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/poland/adult-education-and-training>
- Eurydice (lipanj 2024^c). About, *Eurydice.com*, <https://www.eurydice.org/about/>
- Eurydice (lipanj 2024^d). Eurydice Network, *Eurydice.com*. https://en.wikipedia.org/wiki/Eurydice_Network
- Eurydice (lipanj 2024^e). About, *Eurydice.com*. <https://www.eurydice.org/about/>
- Eurydice (lipanj 2024^f). Building Bridges: Eurydice Network's Enlargement, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu>
- Eurydice (lipanj 2024^g). Sweden – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/sweden/adult-education-and-training>
- Eurydice (lipanj 2024^h). Portugal – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/portugal/adult-education-and-training>
- Eurydice (lipanj 2024ⁱ). Estonia – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/estonia/adult-education-and-training>

- Eurydice (lipanj 2024^j). Romania – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/romania/adult-education-and-training>
- Eurydice (lipanj 2024^k). Slovakia – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/slovakia/adult-education-and-training>
- Eurydice (lipanj 2024^l). Serbia – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/serbia/adult-education-and-training>
- Eurydice (lipanj 2024^m). Denmark – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/denmark/adult-education-and-training>
- Eurydice (lipanj 2024ⁿ). Norway – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/norway/adult-education-and-training>
- Eurydice (lipanj 2024^o). Finland – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/finland/adult-education-and-training>
- Eurydice (lipanj 2024^p). Spain – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/spain/adult-education-and-training>
- Eurydice (lipanj 2024^r). Croatia – Adult education and training, *Eurydice.com*. <https://eurydice.eacea.ec.europa.eu/national-education-systems/croatia/overview>
- Faura-Martínez, Ú., Lafuente-Lechuga, M., & García-Luque, O. (2020). Social and Territorial Cohesion in Spain: Relevance of the Socioeconomic Context, *Social Indicators Research*, 150, 501–547. <https://link.springer.com/article/10.1007/s11205-020-02308-9>.
- Field, J. (2005). *Social Capital and Lifelong Learning*, The Policy Press, University of Bristol.
- Higginbotham, D. (lipanj 2024). Adult education, *Prospects.ac.uk*. <https://www.prospects.ac.uk/further-education/adult-education>
- Hinzen, H., & Meilhammer, E. (2022). 100 years of Volkshochschule in Germany – 50 years of DVV International: Signposts for local and global comparative perspectives on adult learning and education, *International Review of Education*, 68, 125–154. <https://link.springer.com/article/10.1007/s11159-022-09944-y>
- Illeris, K. (2014). Transformative Learning and Identity, *Journal of Transformative Education*. Vol.12. Issue: 2. <https://doi.org/10.1177/1541344614548423>.
- Jarvis, P. (2004). Adult Education and Lifelong Learning – Theory and Practice, *Taylor & Francis Group, RoutledgeFalmer*. <https://doi.org/10.4324/9780203561560>.
- Kersh, N., & Laczik, A. (2021). Towards understanding of policy transfer and policy learning in adult education in the context of United Kingdom, *Research*

- in Comparative & International Education*, Vol. 0(0) 1–21. <https://doi.org/10.1177/17454999211061236>
- Kersh, N., Toivainen, H., Pitkänen, P., & Zarifis, G. K. (2021). *Young Adults and Active Citizenship: Towards Social Inclusion Through Adult Education*, <https://doi.org/10.1007/978-3-030-65002-5>. Springer International Publishing AG.
- Kesner-Škreb, M. (2007). Lisabonska strategija, *Financijska teorija i praksa*, 31(4), 441–443. <https://hrcak.srce.hr/22020>
- Lange, E. A. (2018). Transformative Sustainability Education: From Sustainababble to a Civilization Leap (397–419), *The Palgrave International Handbook on Adult and Lifelong Education and Learning*. Edited by Marcella Milana, Sue Webb, John Holford, Richard Waller, and Peter Jarvis. https://link.springer.com/chapter/10.1057/978-1-137-55783-4_21. Macmillan Publishers Ltd.
- Merriam, S. B., & Brockett, R. G. (1996). *The Profession and Practice of Adult Education: An Introduction* (Jossey Bass Higher and Adult Education Series). John Wiley & Sons, Inc.
- Ministerio de Educación, Formación Profesional y Deportes (MEFPD) (lipanj 2024). Centros de Educación de Adultos en España. *educacionyfp.gob.es*. <https://www.educacionyfp.gob.es/dam/jcr:45801dfe-5f5c-4ec1-bda8-ccbe137fee3a/re33603-pdf.pdf>
- OECD (lipanj 2024). Adult learning and education. Global Policy Solutions. <https://gpseducation.oecd.org/revieweducationpolicies/#!node=41761&filter=all>
- Peterson, C. M., & Ray, C. M. (2013). Andragogy and Metagogy: The Evolution of Neologisms, *Journal of Adult Education*, 42(2), 80–85. <https://files.eric.ed.gov/fulltext/EJ1047343.pdf>
- Phyu Thwe, W., & Kálmán, A. (2024). Lifelong Learning in the Educational Setting: A Systematic Literature Review, *The Asia-Pacific Education Researcher*, 33, 407–417. <https://link.springer.com/article/10.1007/s40299-023-00738-w>
- Rocco, T. S., Munn, S. L., & Collins, J. C. (2018). The Critical Turn in Human Resources Development (227–244), *The Palgrave International Handbook on Adult and Lifelong Education and Learning*. Edited by Marcella Milana, Sue Webb, John Holford, Richard Waller, and Peter Jarvis. Macmillan Publishers Ltd. <https://journals.sagepub.com/doi/10.1177/1523422314543847>.
- Skolverket (lipanj 2024). This is the Swedish National Agency for Education, *skolverket.se*, <https://www.skolverket.se/andra-sprak-other-languages/english-engelska>
- United nations (lipanj 2024). Department of Economic and Social Affairs – Sustainable Development, *sdgs.un.org*. <https://sdgs.un.org/goals>
- United Nations Educational, Scientific and Cultural Organization (UNESCO) (2023). The right to lifelong learning: Why adult education matters. *Unesco.org*. <https://www.unesco.org/en/articles/right-lifelong-learning-why-adult-education-matters>
- Watts, A. G. (2010). Learning through life: inquiry into the future for lifelong learning – Book review of Schuller T. & Watson D. 2009, Leicester, *National Institute for Adult Continuing Education*. <https://doi.org/10.1080/03069885.2010.490414>