

The Importance of Lifelong Education in Modern Economy

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Abstract

Lifelong education includes both formal and informal learning patterns across an individual's life, aimed at continuous personal development and enhancing societal quality of life. This concept emerged as an extension of educational advancements, representing a broader, more profound understanding of learning that focuses on redesigning education to be more functional and impactful. In modern economies, lifelong education is increasingly recognised as a way to adapt to dynamic career paths and rapid technological changes. It is not only a tool for career advancement and employability but also a means to foster adaptability, creativity, and resilience. The focus on lifelong learning supports individuals in remaining competitive in evolving job markets, allowing them to expand their professional networks and achieve long-term success. As industries and the nature of work continue to evolve, lifelong learning is essential for maintaining relevance in an ever-changing landscape. Additionally, lifelong education has societal benefits, promoting social cohesion, civic engagement, and personal fulfilment. In the context of the digital economy, it provides individuals with the skills needed to thrive in a technology-driven environment, supporting both personal and professional growth.

Keywords: lifelong education, lifelong learning, personal development, employability, digital economy, educational system, labour market

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Introduction

Lifelong education has become increasingly vital in today's rapidly evolving world, where continuous learning is essential for both individual and societal progress. This concept encompasses formal and informal learning throughout a person's life, supporting not only professional growth but also personal fulfilment and social cohesion. As industries and technologies develop at an unprecedented pace, individuals must adapt by expanding their knowledge and skills to remain competitive in the job market. Lifelong education thus serves as a bridge between traditional education and the dynamic demands of the modern economy, fostering a proactive approach to learning that enables people to respond effectively to shifts in employment and technology.

Lifelong education encompasses both formal and informal learning throughout an individual's life, aimed at the intentional and continuous enhancement of personal and societal quality. The concept of lifelong education emerged from advancements in the field of education, particularly on a worldwide scale. The phrase signifies a renewed exploration of the comprehensive and profound significance of education, with the objective of reconfiguring the entire domain to enhance its functionality and efficiency.

Dorsett et al. (2010) assert that in several advanced economies, individuals are increasingly engaging in lifelong learning, which refers to the educational pursuits occurring beyond the conclusion of formal education.

Billett (2018) asserts that the public discourse on lifelong learning has concentrated on learning pertinent to individual employability throughout their professional careers since 1996, the year designated for lifelong learning. Conversely, in the early 1970s, educators and other stakeholders frequently underscored the necessity of adopting lifelong education as a foundational premise for the assessment and reform of educational institutions globally.

Nelson Mandela emphasised the significance of lifelong education, as noted by the World Bank (2019, p.70), which asserted that education serves as a powerful catalyst for personal development. He elucidated that "through education, a farmer's daughter can become a doctor, a miner's son can ascend to mine boss, and a farm worker's child can attain the presidency of a great nation," particularly underscoring that "what we make of what we possess, rather than what we are bestowed, distinguishes one individual from another."

Moreover, as many industries and work dynamics progress, career paths are increasingly fluid and uncertain, rendering lifelong learning essential for individuals, organisations, and nations to maintain competitiveness (Penn LPS, 2020). A dedication to lifelong learning necessitates effort; yet, if this effort is exerted, it facilitates achievement in self-directed learning (Penn LPS, 2020).

A primary impetus for many individuals pursuing further education is the aspiration for professional progression, frequently to enhance their existing role or transition to a new profession (Penn LPS, 2020). Participation in lifetime learning not only enables individuals to be active and competitive in the labour market but also facilitates the expansion of their professional network, ultimately contributing to professional achievement, which is a significant benefit of lifelong education (Penn LPS, 2020).

Vander Ark (2017) enumerates ten reasons underscoring the significance of lifelong education for both individuals and society, which also impacts the economy: enhancement of skills and functionality, a sense of purpose and direction, life satisfaction and enthusiasm, employability, economic imperative, leadership, transferability, social awareness and perspective on societal issues, practicality, and overall well-being.

In the context of the digital economy, lifelong education is especially crucial as digitalisation transforms workplaces, creating both new opportunities and challenges. This shift requires individuals to continually enhance their technical skills, adapt to novel technologies, and cultivate transferable skills such as critical thinking, creativity, and adaptability. Furthermore, lifelong education benefits society, contributing to a more educated, adaptable workforce that can drive innovation and maintain economic resilience. This paper examines the evolution of lifelong education, its significance in the digital era, and its role in equipping individuals to navigate and thrive in an increasingly complex and interconnected world.

This paper will first address the notion of lifelong education, followed by an explanation of its historical development and significance within the framework of the digital economy. The concluding section will present prior research on lifelong education through inductive and deductive analytical methodologies. Additionally, the paper will employ bibliometric analysis of scholarly articles to highlight the most significant concerns pertaining to lifelong learning.

The notion of lifelong education

The Cambridge Online Dictionary (2021) defines education as the process of teaching or learning, particularly in academic institutions, or the knowledge acquired through this process. Conversely, the Croatian Encyclopaedia characterises it as "the result of the process of acquiring knowledge" (Anić et al., 2002, p. 848). The Cambridge Online Dictionary (2021) defines learning as the practice of obtaining knowledge, or more formally, as the process of comprehending something through study or experience. The Croatian Encyclopaedic dictionary characterises learning as "a phenomenon of cognitive ability wherein facts are acquired, organised, and restructured with the ultimate aim of independently formulating conclusions and the resultant facts" (Anić et al., 2002, p. 1369).

To elucidate the concept of lifelong education, it is essential to recognise that the terms lifelong learning and lifelong education are frequently conflated in practice and are commonly employed interchangeably. Margaret et al. (2015) assert that although the terms "lifelong education" and "lifelong learning" are frequently used interchangeably, they do not inherently denote the same concept. Lifelong learning encompasses a comprehensive notion that involves unintended, unstructured, and spontaneous knowledge acquisition, whereas lifelong education pertains solely to organised learning modalities. According to Hager (2011), lifelong learning typically denotes formal, structured educational experiences that adhere to specific standards. In contrast, it also encompasses a broader spectrum of learning that transpires across various contexts and is not confined to a singular environment. In this context, Billet (2018) articulates several principles of lifelong learning and education.

Billet (2018) defines lifelong education as an institutional reality that originates from and is endorsed by society. This indicates that experiences derived from lifelong learning, whether systematically structured by educational institutions or shaped by the interests, practices, and requirements of workplaces or organisations, encompass suggestions and demands for change that arise from social practice (Billet, 2018).

Billet (2018) describes lifelong education as a collection of experiences generated within the social realm, expressed through social cues that encompass certain forms, norms, and practices. Lifelong learning, as articulated by Billet (2018), encompasses personal attributes—specifically, an individual's knowledge, skills, and values—alongside mechanisms that originate and execute learning, influenced by the individual's actions, subjectivity, and interests. Billet (2018) asserts that the execution of lifelong learning as a personal endeavour is influenced by the individual's abilities,

interests, and objectives. In contrast, lifelong education relies on the delivery of intentional or unintentional experiences within an educational or professional context. Billet (2018) asserts that educational programs typically emerge from specific needs or concerns and are designed to achieve particular outcomes, as they aim to fulfil certain social objectives, such as skill development or the alteration of norms, forms, and practices (e.g., innovative workplace practices). Billet (2018) asserts that lifelong learning encompasses individuals and their knowledge, skills, and values, which include the capacities, interests, and values they contribute to the learning process. This is often termed readiness, which is defined as the capability of individuals to engage productively with experiences to facilitate effective learning. Conversely, the precondition for lifelong education encompasses norms, social structures, and practices that are essential for what is provided to students (Billet, 2018). Educational provision encompasses physical resources, equipment types, access to practice, and the capabilities and interests of educators, as well as the characteristics of participants and programs, including their capacity or willingness to engage in offered experiences (Billet, 2018).

Considering the notions of education and learning, the Cambridge Online Dictionary (2021) does not define lifelong learning. However, it is characterised as the continuous acquisition of knowledge and skills throughout one's life, frequently to enhance job performance. Likewise, Cropley (1980) asserts that lifelong learning extends beyond the learning modalities found in educational institutions and does not solely yield knowledge akin to that obtained in school settings. Traditional classroom education and vocational training encompass a broader spectrum of activities that extend beyond the conventional understanding of learning within official educational frameworks, including experiences that foster self-development and self-actualisation.

Cropley (1980) asserts that such learning is affected by a multitude of elements, encompassing not only occurrences within educational institutions but also other external influences. Influences range from highly systematic and ordered, such as traditional educational institutions, to unsystematic and chaotic, as shown by the Internet or a parent engaging in play with a child.

Iqbal (2009) characterises lifelong education as a continuum of both deliberate and incidental chances that shape learning over the lifespan. Cropley (1980) defines lifelong education by analysing events that influence learning, asserting that the discourse on lifelong education necessitates an examination of educational reforms essential for promoting, supporting, and enhancing lifelong learning. In this context, Cropley (1980) delineates the primary attributes of lifelong education, which he defines as a mechanism for promoting lifetime learning, and these attributes are as follows:

- Lifelong education persists throughout an individual's entire life.
- Lifelong education facilitates the systematic acquisition, renewal, enhancement, and completion of knowledge, skills, and attitudes. A similar approach is essential in response to the continual alterations in contemporary life conditions, with the primary objective of fostering individual self-actualisation.
- The effective execution of lifelong learning relies on individuals' growing capacity and motivation to participate in self-directed learning endeavours.
- Lifelong learning recognises the impact of all educational influences, whether official or informal.
- Lifelong education denotes the ongoing acquisition of knowledge and skill enhancement beyond traditional or mandatory schooling. It is characterised

by its informal, voluntary, self-directed nature and emphasis on individual interests.

Conversely, Yang and Valdés-Cotera (2011) define lifelong learning as a comprehensive array of learning options, highlighting its extension beyond formal schooling to encompass informal learning.

Aspin and Chapman (2000) identify four primary functions of lifelong education in the literature: preparing individuals for adult life, distributing education across a lifetime, recognising the educational value of all life experiences, and equating education with the entirety of life.

Nevertheless, other authors assert that the terminology and concepts of lifelong education and lifelong learning are ambiguous, suggesting that these terms are utilised interchangeably (e.g., Gelpi, 1984; Aspin & Chapman, 2000; Field, 2001; Roulston, 2010). Gelpi (1984), an early contributor to the discourse on lifetime education, asserts the necessity for a precise definition of the word "lifelong education". He emphasises that the issue arises from the distinction between clearly defined terms like "vocational education" or "technical education" and the ambiguity surrounding less specific terms such as "lifelong education." Numerous ostensibly analogous words, such as "permanent education," "further education," and "continuous education," are frequently employed interchangeably with "lifelong education," as well as among themselves.

Additionally, several authors, like Field (2001) and Roulston (2010), employ the phrases adult education and continuing education interchangeably with lifelong education, a notion originally referenced by Cropley (1980). Aspin and Chapman (2000) further assert that certain authors utilise the phrases "careers education" and "recurrent education" interchangeably with lifelong education.

History of the concept of lifelong learning

Iqbal (2009) posits that lifelong education integrates pedagogy and andragogy, utilising several delivery techniques like online learning, e-learning, continuing education, and correspondence courses. E-learning has become especially important during the COVID-19 pandemic (Pejić Bach et al., 2023; Qureshi et al., 2024; Brozović et al., 2022). The protracted duration of formal education and the insufficiency of skills obtained during schooling for future work and success has led to the continuous evolution of the notion of lifelong education (Iqbal, 2009; Glodowska et al., 2022).

Vargas (2017) elucidates that lifelong learning is not a novel concept; rather, it has been a significant element of educational discourse and has been integrated into educational institutions and policies for millennia, tracing its origins to ancient societies and civilisations globally.

Field (2001) asserts that the concept of lifelong learning was extensively promoted in the late 1960s and early 1970s, quickly garnering political support. He elucidates that during this period, lifelong learning was characterised by humanistic and even radical ideals; however, since the 1990s, it has increasingly adopted economic and conservative connotations. Ignatovich (2020) asserts that the 1960s marked the inception of lifelong education, characterised by a surge in scientific publications, as the concept materialised and gained traction through the World Bank program and initiatives from three distinct global organisations:

- The Organisation for Economic Co-operation and Development (OECD) advocates for the concept of recurrent education, which entails substituting a duration of full-time employment with a phase akin to a "sabbatical,"

defined as a period of paid or unpaid leave granted to university educators or other professionals for study or travel.

- The United Nations Educational, Scientific and Cultural Organisation (UNESCO) published a study titled *Learning to be: The world of education today and tomorrow*;
- The Council of Europe advocated for lifelong education as a plan to reform European education, intending to encompass all facets of an individual's life cycle.

Vargas (2017) highlights that UNESCO's significant initiative concerning lifelong education was the formation of the International Commission for the Development of Education in 1971, commonly referred to as the Faure Commission, named after its head. The committee was tasked with contemplating potential solutions to significant issues in educational growth within a dynamic society. In 1972, it submitted its final report, titled *Learning to Be: The Society of Education Today and Tomorrow*.

The report garnered significant attention and exerted considerable influence on the history of lifetime education by employing the phrase lifelong education rather than lifelong learning (Vargas, 2017; Ignatovich, 2020). The Commission's report advocated for lifelong learning as a foundational premise for educational reform and as a method to cultivate the complete person essential for establishing a learning society (Vargas, 2017). The report anticipated lifelong education as a transformative and liberating influence, extending beyond schools to encompass society at large (Ignatovich, 2020). After that pivotal study, other intergovernmental organisations endeavoured to suggest analogous measures (Vargas, 2017).

However, Ignatovich (2020) also notes that there are historical records of lifelong learning even before the 1960s, with the term recognised by several names and dates and largely assimilated into the history of adult education. In this context, Vargas (2017) argues that throughout history, there are four periods when the concept of lifelong education gained popularity and precision, that is, when lifelong education gained strength and specificity, namely:

- Enlightenment in the 18th century - a period when philosophical commands emphasised the role of science and reason in individual and social progress, creating a fertile climate for the cultivation of knowledge and the practice of thought, which in turn required the permanent education of citizens.
- The industrial revolution in the 19th century – a period when new forms of production and mechanisation required workers trained in the use of new technologies who were able and willing to learn continuously;
- The first half of the 20th century was a period marked by two world wars, with the flourishing of adult education and continuous education to deal with emerging problems. This was followed by the development of instrumentalism and pragmatism in education, which suggests that the purpose of education can only be defined by the educational act itself; therefore, the purpose of education was to prepare students for lifelong education and
- In the second half of the 20th century, lifelong education was consolidated into the leading principle of educational efforts since, after the Second World War, following the impetus gained by adult education and continuing education and driven by the need for the reconstruction of Europe, nation states and civil society actively worked on finding ways to promote more just, democratic, and humane societies.

Furthermore, Jarvis (2014) presents a conceptual model that shows the history of the development of lifelong education from adult education to lifelong learning, first explaining how the concept of education changed from the so-called "front-end"

model in which it was considered that the period of education in a person's life is for a period of 3-5 years, up to 16-25 years.

Over time, the previously mentioned "front-end" model of education became obsolete, paving the way for alternative perspectives, one of which is the lifelong education process that commences in childhood and persists throughout life (Jarvis, 2014). Furthermore, Jarvis (2014) observes that higher education is progressively shifting towards the implementation of lifelong learning strategies, albeit at a notably sluggish pace.

According to Žiljak (2015), individuals who identify as adults in society have access to diverse educational experiences encompassing both formal and informal learning processes, which enable them to enhance and broaden their capacity to live, work, and contribute to society as well as to pursue personal interests and objectives. Adult learning and education encompass a continuum of activities and processes involving the acquisition, acknowledgement, exchange, and alteration of skills, alongside the recognition and dissemination of information. The increasingly indistinct boundaries between youth and adulthood result in the term adult being applied to all individuals participating in adult learning and educational endeavours, irrespective of their attainment of the legal age of majority in their respective countries (Žiljak, 2015).

Aspin and Chapman (2000; 2012) assert that it has become increasingly evident that policymakers in many countries, agencies, and institutions globally are devoting greater attention to lifelong learning. This concept should be advocated in future educational policy, serving as a fundamental and robust foundation for the delivery of education and training.

Skills, abilities and competences of lifelong learning

Historically, the principal aim of education has been to enhance individual and societal welfare. Education, in a comprehensive context, empowers individuals to contribute to society and the economy, enhance their skills, meet civic responsibilities, and transmit their traditions and values to subsequent generations (Trilling & Fadel, 2009). In the swiftly evolving landscape of the twenty-first century, education is anticipated to prepare individuals for the requirements of a highly mobile, technology-driven society. In the contemporary day, significantly influenced by advancements in communication and transportation technologies, educational institutions are tasked with preparing students not just for future employment but also for evolving expectations. Bialik and Fadel (2015) examined the competencies vital for 21st-century education, termed the 4Cs: creativity, critical thinking, communication, and collaboration, emphasising the necessity of applying knowledge gained in school to real-life situations. In a separate survey, the top ten soft skills deemed most essential in the business sector were identified as honesty, communication, friendship, dedication, social skills, positive attitude, knowledge, flexibility, teamwork, and work ethic (Robles, 2012). It has been proposed that in a progressively globalised, technology-driven economy, collaboration with individuals from diverse cultures, innovative problem-solving, good communication, and critical thinking are essential (Gewertz, 2007). Numerous research studies indicate that university graduates are deficient in essential occupational abilities (Du Toit et al., 2016; Jollands et al., 2012; Robles, 2012). Communication, collaboration, intercultural competence, analytical reasoning, technological proficiency, and creativity are vital skills for contemporary students, necessitating that educational institutions evolve to address these demands (Saavedra & Opfer, 2012).

Adult education can be considered a highly individualized experience. Adult learning and lifelong learning, on the other hand, are not interchangeable words.

Adult education, which is generally limited to providing opportunities for people to engage in learning activities throughout their adult lives, is not the same as lifelong learning. To change attitudes, the challenge for lifelong learning is to radically rethink learning, teaching and education for the digital age. Learners of all ages need to be involved in acquiring and applying information and skills in the context of real, self-directed challenges as part of lifelong learning. Lifelong learners gain clarity in the context of their work on real-world challenges as a result of a combination of work and learning. Goal setting and self-evaluation in this regard are crucial in lifelong learning. Goal setting reflects a student's commitment and is an important aspect of lifelong learning. Learning becomes enjoyable when the student achieves his goals. Motivation is sometimes weak in traditional learning because students are not involved in setting goals. Students generally do not understand such goals and have nothing to do with life goals. Traditional students tend to view the educational goals of the instructor, institution, or society rather than their own. As a result, goals are seen as set and fixed, and students have little or no input into their growth. Extrinsic incentives, such as praise from teachers, grades, or monetary compensation, are used to encourage students to engage in traditional learning. On the other hand, lifelong learning is organically driven, including the ability to make positive changes in the approach to work. As for self-evaluation, such activity does not result in a final product but rather a revised direction, more learning activities, or a shift in goals. A lifelong learner evaluates whether and why the acquired information and abilities are acceptable in this way. Lifelong learning is generally self-directed due to intrinsic motivation. It is defined as a process in which students take the initiative to increase their own social awareness with the help and participation of others.

It facilitates a critical analysis and reflection of one's circumstances, enabling the identification of personal learning needs, particularly concerning the competencies recognised, as well as the formulation of socially and personally pertinent learning objectives, the identification of human and material resources for learning, the selection and implementation of suitable learning strategies, and the reflection and evaluation of one's learning. Lifelong learners exhibit curiosity, resourcefulness, a will to learn, tenacity, cognitive flexibility, systematic discipline, logic, analytical skills, and confidence in their capacity to learn from others, share knowledge, and accept feedback. Lifelong learners exhibit communication skills, self-directed learning capabilities, the capacity to serve as agents of change, and the proficiency to disseminate best practices and information. Longworth and Davies (1996) assert that although the educational system is entirely accountable for cultivating many abilities, it is not exclusively responsible for fostering lifelong learning attributes. They assert that the attributes of lifelong learning are developed in collaboration with various social partners, including parents, professional organisations, and interest groups. Knapper & Cropley (2000) assert that the attributes of lifelong learners extend beyond psychological criteria. The proponents assert that the characteristics of lifelong learning are distinctive as they encompass both cognitive and non-cognitive elements, specifically, (1) "individuals' learning capacities" (knowledge, skills, abilities, and cognitive processes); and (2) "willingness to learn" (i.e., motivation, attitudes, values, self-image, positive disposition towards learning, self-assurance, and readiness to challenge established beliefs).

The inconsistencies in the concept of lifelong learning arise from its dual objectives: to act as a mechanism for democratisation, equal opportunities, and social cohesion while simultaneously serving as a means to enhance human resource development, or "employability" as termed in EU policy, in response to globalisation and economic competitiveness demands. Three distinct value patterns shape the notion of

knowledge within lifelong learning: (i) a democratic conception of knowledge that fosters social inclusion, cohesion, and participation; (ii) an economic conception of knowledge that encourages income generation, wealth creation, and global competitiveness; (iii) and a conception of knowledge where the production of knowledge serves as the foundational element. Lifelong learning may lead to the fragmentation of knowledge while also facilitating the acquisition of information by individual learners.

Lifelong learning in higher education

Adult learning and lifelong learning have traditionally been pushed to the margins of institutions, assigned to small units or units without a clear strategic function. However, that is changing fast. Universities are investing in online and hybrid learning, alternative credentials, new learning tools, and various collaborations (Coates, 2020). Such efforts have been developed as a reaction to the demand mentioned above patterns, to tap into new sources of financing and to counter the entry of new commercial competitors into the global institutional sector (Yang et al., 2015).

Higher education institutions are repositioning themselves to be locally or internationally relevant, as well as expanding their contacts with companies to increase the employability of their students. While the individual efforts of institutions, disciplines and professions are vital, it is difficult to 'aggregate' these efforts in ways that help understand, develop, foster, and manage these new markets. Indeed, releasing a swarm of free or paid non-credit or credit online resources, even if they have 'stacking potential', badges or microcredit, is likely to increase complexity and confusion, hindering clarity and progress where it is most needed. Established university assessments and rules do not contribute to clarifying the environment and, in fact, have shifted from lifelong learning to degrees and research. Although the lifelong learning market is mostly commercial and private, it is necessary to clarify what is happening, how institutions can help and how it is beneficial for them to try. For future growth and contribution, consistency of policy and education is critical (Tamez, 2014; Lauder, 2020). This environment calls for a series of new far-reaching educational arrangements that generally seek to include and promote the participation of higher education institutions in lifelong learning.

In the context of higher education, Schuetze and Slowey (2002) show how the structural components of learning providers and their courses can influence participation decisions. Institutions used to offer courses in a 'conventional' way, but in recent years, this has evolved into a 'lifelong learning' way.

The conventional form of learning is based on university classes that take place during fixed hours and require students to adhere to a strictly regulated curriculum. They have very little control over how they want to organise their learning. The lifelong learning mode offers more flexible entry routes, flexible study hours and online or blended learning options, for example. Barriers to adult participation, according to Cross (1981), are often situational and dispositional in nature, but institutional barriers also play a role. Providers who charge exorbitant enrolment fees or provide courses in hard-to-reach regions are setting up their barriers. Regarding education providers, it should be noted that most lifelong learning activities take place in the workplace, which is called informal training (Fuller & Unwin, 2011; Hefler & Markowitsch, 2012; Kyndt & Baert, 2013).

Those who work in constrained environments want to stay as close to their primary task as possible, and the chances of learning are only given if they are firmly focused on the task at hand. Employers pay more attention to the overall development of employees in large work environments. Adults are more likely to participate in training

if they work for a larger company, as these companies are more likely to have dedicated training units or HRD units with specific training expertise. Again, these examples show that an adult's willingness to participate in lifelong learning is influenced by the environment in which he lives and the company he works for. In our globalised world, through modernisation, to ensure that all countries continue to change and develop, people, especially young people, should have the necessary qualifications to know how to access information, use information and technology, and produce it, how to solve problems through research, make sound decisions and think critically and creatively (Knapper & Cropley, 2000). In formal and informal education, it is necessary to establish individual training programs for continuous education. As a result, training programs should include objectives to improve the necessary competencies and capabilities.

The Committee for Culture and Education has categorised the fundamental competencies of lifelong learning into eight primary categories: "communication in the mother tongue, communication in foreign languages, mathematical and basic scientific and technological competencies, digital competence, learning to learn, social and civic competencies, sense of initiative and entrepreneurship, and cultural awareness and expression" (Figel, 2007, p.66). Educational institutions should exert considerable effort in cultivating individuals who satisfy established requirements, engage in continuous study, and enhance their lifelong learning competencies. Post-graduation, faculties must assume substantial responsibilities to effectively facilitate lifelong learning initiatives that assist individuals in adapting to evolving employment conditions. Universities promote professional development by offering lifetime learning opportunities via online education, virtual universities, and e-learning platforms.

According to Goksan, Uzundurukan, and Keskin (2009), universities significantly contribute to critical thinking, problem-solving, independent decision-making, and lifelong learning in today's information society. Demirel, Sadi, and Dagyar (2016) discovered that competency levels fluctuate based on the duration of professional experience in relation to the digital era. Their research examined major differences in teachers' lifelong learning tendencies across several variables.

Effective initiatives for facilitating adult access to higher education must identify and evaluate the educational needs of adults and their communities in higher education settings based on an analytical framework. Consequently, the goals and objectives of universities and colleges must prioritise needs-based programs within their educational and training provisions. Moreover, universities and colleges must demonstrate and uphold free access to diverse scientific lectures, programs, and innovative forms of information, enabling adult students to select their desired program or service in a more structured manner. Higher education institutions may not recognise their role as centres of adult learning. They may lack a comprehensive knowledge of the attributes that define a university as a hub for lifetime learning.

Notwithstanding the extensive research on collaboration conducted within and between European institutions, the subject's heterogeneity persists as a prominent characteristic. This can be observed in other aspects, not alone in words. The term 'lifelong learning' in one nation may be referred to as 'adult education', 'postgraduate studies', or 'continued education' in another, and the scope of what is encompassed may vary between countries.

A bachelor's or master's degree with a professional emphasis may be classified as lifelong learning in one nation while being considered standard graduate courses in another. The designation is associated with the provision in certain nations, learners or target demographics in others, and the style of delivery (full-time or part-time, remote

or on-campus, academic or professional, customised, or generic) in additional contexts.

Continuing education and lifelong learning

Continuous education, professional development, and lifetime learning are synonymous with the educational or training process, which serves as the paramount tool for a company's success. Continuing education and adult education evolved during the twentieth century. As nations industrialise, the demand for ongoing education and the attainment of pertinent skills escalates, challenging traditional educational frameworks and creating opportunities for both professional and personal skill enhancement. Numerous elements necessitate lifelong learning in the twenty-first century, including enhanced information accessibility, swift technology progress, global relationship improvements, industry shifts, and evolving skill requirements (Gaymer, 2006). Organisations must implement lifelong learning to enhance the skills and knowledge of their personnel. Individuals engage in lifelong learning to enhance their careers, improve their employment, and enrich their lives (Gaymer, 2006). A multitude of advantages is associated with lifelong learning, encompassing:

I. Capacity building

- develop job opportunities • change careers or advance • upgrade or learn new skills and develop abilities • gain exposure to new ideas and best practices • increase competition in the labor market • help advance technology and industry • turn work into a pleasant job • help cope with economic downturns • develop your professional network

II. Development in the classroom

- obtain a high school diploma • develop basic literacy • provide basic necessities for further education and prepare someone for college or university • re-enroll in classes to improve academic grades • qualify for academic scholarships

III. Personal development

- acquire new hobbies • become aware of different problems • meet new people and expand your network • deal with your community • recognise problems that affect yourself and one's community • improve self-esteem.

Many note that governments, companies, and institutions need to learn how to create and implement more comprehensive frameworks for analysing and responding to environmental concerns. This requires the examination, creation and implementation of new policies and programs from the point of view of many sectors and specialities (Baer & Reuter, 2015). New skills and competencies are becoming increasingly necessary to do this effectively. It is not easy to create institutions in which policies, operations, contents and practices are intertwined. The 'whole school' or 'whole institution' method, in which schools make simultaneous adjustments to the curriculum, extracurricular activities, teacher training, human resources and infrastructure operations and processes, is one of the most promising ways (McMillin & Dyball, 2009).

The role of lifelong learning in the context of the digital economy

The swift advancement of novel technology has generated new prospects for both enterprises and employees. The readiness to adopt and use new technology varies considerably among countries, industries, and organisations. Economic infrastructure, encompassing digital infrastructure, mobile and internet connectivity, networks, data centres, and data platforms, alongside company operations, serves as a metric for

assessing readiness, which includes digital processes, digital payments, and interactions within customer and supply chains. Nonetheless, as technology transforms employment and the workplace, employee preparedness will be the paramount factor in securing success. Employees are currently seeing the significant impacts of technological advancements on their work and the workplace. The decline in employee abilities parallels technological advancements, necessitating efficient skills management among the workforce.

Henceforth, work and the workplace will undergo significant transformation. This is anticipated to be a challenging policy endeavour, particularly when employee careers are projected to extend due to rising life expectancy. Enhanced interaction between humans and machines, facilitated by emerging technologies, will elevate labour productivity; however, it will necessitate new and often advanced skills, innovative technological interfaces, alternative wage structures in certain instances, and varied investments in skill development by both enterprises and employees. If capabilities continually become obsolete due to technological advancements, the duration of post-graduation may have minimal effect on opportunities for skill acquisition. Nonetheless, the evidence is inconclusive. A study conducted in the Netherlands revealed that, among scientists and engineers, age (adjusted for time after graduation) exhibited a negative correlation with training (De Grip & Smits, 2012). This indicates that as individuals age, the demand from employers for training, or the motivation of workers to engage in it, diminishes. The growing digitisation of society and the emergence of networked and hybrid organisational structures define lifelong learning in the digital age. Lifelong learning throughout this era must consider how digitisation and hybrid, networked organisations obscure previously established boundaries of content, location, technology, time, and social contexts (Jaldemark, 2021; Nygren et al., 2019; Peters & Romero, 2019).

Multiple stakeholders, such as multinational organisations, governments, authorities, enterprises, educational institutions, and recreational organisations, are invested in lifelong learning conditions. The digitisation of lifelong learning, encompassing both national and global initiatives, has served as a means to enhance societal development (Lee & Jan 2018). Facilitating the expansion of formal training and offering opportunities for individuals to acquire knowledge in non-formal and informal contexts exemplify such initiatives. For enterprises, digitising lifelong education ensures access to a workforce equipped with appropriate skills and knowledge. Work-integrated learning and workplace learning are concepts that underscore the significance of experiential learning inside organisations. Learning has evolved into a hybrid phenomenon due to the digitisation of processes, incorporating both physical elements and digital networks, resources, systems, and tools. Collaboration among higher education institutions, businesses, and government entities may be crucial to lifelong learning initiatives (Jaldemark & Öhman, 2020).

With technological advancement, skills rapidly become outdated. With the rise in life expectancy, effective management of employee skills is becoming increasingly crucial. Occupations necessitating advanced cognitive and socio-emotional skills are progressively being automated or outsourced, while positions characterised by heavy routine content are being mechanised or outsourced to differing extents. The evolving landscape of professions and vocations, influenced by emerging technology, necessitates an emphasis on education that transcends traditional employment to adapt to technological advancements and enhance skill versatility. A transition to ongoing workplace learning, emphasising lifelong education, is essential to ensure personnel remain pertinent in the digital era (PWC, 2021).

In the realm of the digital economy, lifelong learning is advantageous for employees, businesses, and governments, as articulated by Tuckett (2017). He elucidates the rationale for continuous education throughout life, citing numerous studies that demonstrate its positive impact on health, financial stability, civic participation, and the prospects of an individual's family. Additionally, it facilitates a longer, more independent life while enhancing the overall quality of life. Moreover, Tuckett (2017) elucidates that corporate investment in employee skill development within the framework of lifelong learning fosters flexibility, creativity, problem-solving, collaboration, and an enhanced sense of agency among employees, ultimately resulting in a more satisfied and productive workforce. These are precisely the attributes that organisations will necessitate when confronting the problems of the Fourth Industrial Revolution, commonly referred to as Industry 4.0 or the digital economy (Tuckett, 2017).

Facilitating learning and education in later life is crucial for governments to mitigate dependency in an increasingly ageing population; it also addresses inequality and exclusion, while fostering intergenerational learning and education, thereby strengthening families and communities (Tuckett, 2017). In conclusion, education and learning are correlated with enhanced societal and economic well-being.

Moreover, Barnsley College (2021) asserts that lifelong education enhances the skills, productivity, and well-being of workers in the contemporary digital economy, highlighting its beneficial effects on mental health, life satisfaction, and stress management. Thus, lifelong learning extends employment duration and diminishes reliance on government support upon retirement (Barnsley College, 2021).

According to The Economist (2017), technical advancements in the digital economy necessitate more robust and ongoing connections between education and employment. The necessity for lifelong learning is fundamentally propelled by technological advancement and the evolution of the digital economy. Traditional abilities are gradually becoming obsolete in numerous occupations, as indicated by a special analysis released by The Economist (2017). Consequently, acquiring new skills is becoming increasingly essential, with vocational training proving successful in imparting job-specific competencies. These skills must be consistently updated over a professional lifespan that may extend over several decades. Employees must adapt to the continually escalating changes mandated by their roles as industries and occupations grow rapidly in the digital economy (Barnsley College, 2021).

Barnsley College (2021) cites Forbes.com, stating that typical human knowledge doubles every 13 months, although IBM forecasts that information will double every 11 hours in the forthcoming years. As the prevalence of jobs necessitating routine tasks amenable to automation diminishes, the demand for individuals to acquire skills for more knowledge-intensive roles escalates, alongside a rise in occupations requiring advanced cognitive abilities and creativity. This underscores the critical importance of lifelong learning and education in the digital economy (Barnsley College, 2021).

Conclusion

This paper highlights the crucial role of lifelong education in the modern economy, where rapid technological changes and evolving job markets increasingly require individuals to pursue continuous learning and skill enhancement. Conclusions drawn emphasise that lifelong education, encompassing both formal and informal learning, is instrumental not only for individual career advancement and employability but also for fostering adaptability, creativity, and resilience in a technology-driven world. Furthermore, lifelong education contributes to societal benefits, promoting social cohesion, civic engagement, and overall economic resilience.

In the digital economy, lifelong education becomes even more significant, as it equips individuals with the necessary skills to thrive in a fast-changing environment. The conclusions underscore that lifelong education serves as a bridge between traditional education and the demands of the contemporary labour market, benefiting individuals, organisations, and society. By supporting lifelong education, governments, organisations, and educational institutions contribute to a more skilled, adaptable, and inclusive workforce, essential for economic stability and social progress.

References

1. Anić, V., Brozović Rončević, D., Goldstein, I., Goldstein, S., Jojić, Lj., Matasović, R. & Pranjković, I. (2002). Hrvatski enciklopedijski rječnik. Zagreb: Novi Liber.
2. Aspin, D. N., & Chapman, J. D. (2000). Lifelong learning: concepts and conceptions. *International Journal of lifelong education*, 19(1), 2-19.
3. Baer, H. A., & Reuter, T. (2015). Anthropological perspectives on climate change and sustainability: Implications for policy and action. Brief for GSDR 2015. https://sustainabledevelopment.un.org/content/documents/5834GSDR_brief_anthropology_SD_baer_reuter_rev.pdf
4. Barnsley College (2021). Why lifelong learning is essential for the economy – and for you. <https://www.barnsley.ac.uk/lifelong-learning-essential-economy/>
5. Bialik, M. & Fadel, Ch. (2015). Skills for the 21st Century: What Should Students Learn? Project: Center for Curriculum Redesign. https://www.researchgate.net/publication/318681750_Skills_for_the_21st_Century_What_Should_Students_Learn
6. Billett, S. (2018). Distinguishing lifelong learning from lifelong education. *Journal of Adult Learning, Knowledge and Innovation*, 2(1), 1-7.
7. Brozović, M., Ercegović, M., & Meeh-Bunse, G. (2022). e-Learning in Higher Institutions and Secondary Schools during Covid-19: Crisis Solving and Future Perspectives. *Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy*, 13(2), 45-71.
8. Cambridge Online Dictionary (2021). Education. Cambridge University. <https://dictionary.cambridge.org/dictionary/english/education>
9. Coates, H. (2020). Higher education design: big deal partnerships, technologies and capabilities. Singapore: Palgrave.
10. Cropley, A. J. (1980). Lifelong learning and systems of education an overview, in Cropley, A.J. (Ed). *Towards a system of lifelong education*, Elsevier, 1-15.
11. Cross, K.P. (1981). *Adults as Learners*. San Francisco: Jossey-Bass.
12. De Grip, A. & Smits, W. (2012). What affects lifelong learning of scientists and engineers? *International Journal of Manpower*, 33(5), 583-597.
13. Demirel, M., Sadi, O., & Dagyar, M. (2016). An investigation of science teachers' lifelong learning competencies (The case of Karaman). *Pegem Journal of Education & Instruction*, 6(1), 19-40.
14. Dorsett, R., Lui, S., & Weale, M. (2010). Economic benefits of lifelong learning. Centre for Learning and Life Chances in Knowledge Economies and Societies. <https://www.iser.essex.ac.uk/research/publications/513528>.
15. Du Toit, A., Havenga, M., & Van Der Walt, M. (2016). Project-based learning in higher education: new skills set for consumer studies teacher education, *Journal for New Generation Sciences*, 14(3), 54-71.
16. Field, J. (2001). Lifelong education. *International Journal of Lifelong Education*, 20(1-2), 3-15.
17. Figel, J. (2007). Culture, intercultural dialogue and the role of religion. *European View*, 6(1), 65-70.
18. Fuller, A., & Unwin, L. (2011). Workplace learning and the organization. In M. Malloch, L. Cairns, K. Evans & B. N. O'Connor (Eds.), *SAGE handbook of workplace learning*. Thousand Oaks: SAGE, 45-69.

19. Gaymer, D.M. (2006). Continuing Education and Lifelong Learning Trends. In M.M., Helms (Ed.) *Encyclopedia of management* (5th ed.), 128-131. Farmington Hills, Michigan, USA: Thomson Gale Publishing.
20. Gelpi, E. (1984). Lifelong education: Opportunities and obstacles. *International Journal of Lifelong Education*, 3(2), 79-87.
21. Gewertz, C. (2007). Soft skills in big demand: Interest in teaching students' habits of mind for success in life is on the rise. *Education Week*, 26(40), 25-27.
22. Głodowska, A., Wach, K., & Knežević, B. (2022). Pros and cons of e-learning in economics and business in Central and Eastern Europe: Cross-country empirical investigation. *Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy*, 13(2), 28-44.
23. Goksan, T. S., Uzundurukan, S., & Keskin, S. N. (2009). Lifelong learning and lifelong learning programs of the European Union. In *1st Civil Engineering Education Symposium*, Antalya, Turkey.
24. Hager, P.J. (2011). Concepts and definitions of lifelong learning. In: London, M. (Ed.). *The Oxford Handbook of Lifelong Learning*. Oxford Press, Oxford, 11-25.
25. Hefler, G., & Markowitsch, J. (2008). To train or not to train: explaining differences in average enterprises' training performance in Europe: a framework approach. In J. Markowitsch & G. Hefler (Eds.), *Enterprise training in Europe: comparative studies on cultures, markets and public support initiatives*, 23-60. Vienna: Lit Verlag.
26. Iqbal, M. J. (2009). Life Long Education: A Conceptual Debate. *Seminar.Net*, 5(1). <https://doi.org/10.7577/seminar.2468>
27. Jaldemark, J. (2021). Formal and informal paths of lifelong learning: Hybrid distance educational settings for the digital era. In M. Cleveland-Innes, & D. R. Garrison (Eds.), *An introduction to distance education: Understanding teaching and learning in a new era*, 2nd ed., 25-42. Routledge.
28. Jaldemark, J., & Öhman, P. (2020). In M. de Laat, T. Ryberg, N. Bonderup Dohn, S. Børsen Hansen, & J. J. Hansen (Eds.). *Developing a hybrid and networked educational approach to lifelong learning for organisations and employees*, 12, 47-50. Aalborg University. *Proceedings for the 12th International Conference on Networked Learning*.
29. Jarvis, P. (2014). From adult education to lifelong learning and beyond. *Comparative Education*, 50(1), 45-57.
30. Jollands, M., Jolly, L. & Molyneaux, T. (2012). Project-based learning as a contributing factor to graduates' work readiness. *European Journal of Engineering Education*, 37(2), 143-154.
31. Knapper, Ch. & Cropley, A. J. (2000). *Lifelong Learning in Higher Education*. Psychology Press.
32. Knapper, Ch. & Cropley, A. J. (2000). *Lifelong Learning in Higher Education*. Psychology Press.
33. Kyndt, E., & Baert, H. (2013). Antecedents of employees' involvement in work-related learning: A systematic review. *Review of Educational Research*, 83(2), 273-313.
34. Lauder, H. (2020). The roles of higher education, further education and lifelong learning in the future economy. *Journal of Education and Work*, 33(7-8), 460-467.
35. Lee, M., & Jan, S. K. (2018). Lifelong learning policy discourses of international organisations since 2000: A kaleidoscope or merely fragments?. In *The Palgrave International Handbook on Adult and Lifelong Education and Learning* (pp. 375-396). Palgrave Macmillan, London.
36. Longworth, N., & Davies, W. K. (1996). *Lifelong learning: New vision, new implications, new roles for people, organizations, nations and communities in the 21st century*. London: Kogan Page.
37. Margrett, J. A., & ho Lee, K. (2015). *Adult Education and Lifelong Learning: The US Experience and Beyond*. U: Wright, J. D. (Ed.). *International Encyclopedia of the Social & Behavioral Sciences* (Second Edition). Elsevier, str. 148-152.
38. Mcmillin, J., & Dyball, R. (2009). Developing a whole-of-university approach to educating for sustainability. *Journal of Education for Sustainable Development*, 3, 55-64.

39. Nygren, H., Nissinen, K., Hämäläinen, R., & De Wever, B. (2019). Lifelong learning: Formal, non-formal and informal learning in the context of the use of problem-solving skills in technology-rich environments. *British Journal of Educational Technology*, 50(4), 1759-1770.
40. Pejić Bach, M., Jaković, B., Jajić, I., & Meško, M. (2023). Investigating the impact of COVID-19 on e-learning: Country development and COVID-19 response. *Mathematics*, 11(6), 1520.
41. Penn LPS (2020). The importance of lifelong learning. <https://lponline.sas.upenn.edu/features/importance-lifelong-learning>.
42. Peters, M., & Romero, M. (2019). Lifelong learning ecologies in online higher education: Students' engagement in the continuum between formal and informal learning. *British Journal of Educational Technology*, 50(4), 1729–1743.
43. PWC (2021). Lifelong learning: how to stay relevant in the digital age [online]. Dostupno na: <https://www.pwc.nl/en/insights-and-publications/services-and-industries/people-and-organisation/lifelong-learning-how-to-stay-relevant-in-the-digital-age.html>, pristupano: 20.10.2021.
44. Qureshi, F., Khawaja, S., Pejić Bach, M., & Meško, M. (2024). Slovenian Higher Education in a Post-Pandemic World: Trends and Transformations. *Systems*, 12(4), 132.
45. Robles, M. (2012). Executive Perceptions of the Top 10 Soft Skills Needed in Today's Workplace. *Business Communication Quarterly*, 75, 453-465.
46. Roulston, K. (2010). 'There is no end to learning': Lifelong education and the joyful learner. *International journal of music education*, 28(4), 341-352.
47. Saavedra, A. R., & Opfer, V. D. (2012). Learning 21st-Century Skills Requires 21st-Century Teaching. *Phi Delta Kappan*, 94(2), 8–13.
48. Schuetze, H. & Slowey, M. (2002). Participation and exclusion: A comparative analysis of non-traditional students and lifelong learners in higher education. *Higher Education*, 44, 309-327.
49. Tamez, C.V. (2014). Lifelong learning principles and higher education policies. *Tuning Journal for Higher Education*, 2(1), 91–105.
50. The Economist (2017). Lifelong learning is becoming an economic imperative. <https://www.economist.com/special-report/2017/01/12/lifelong-learning-is-becoming-an-economic-imperative>
51. Trilling, B., & Fadel, C. (2009). 21st century skills: Learning for life in our times. Jossey-Bass/Wiley.
52. Tuckett, A. (2017). Lifelong learning helps people, governments and business. Why don't we do more of it? <https://www.weforum.org/agenda/2017/07/lifelong-learning-helps-governments-business/>
53. Vander Ark, C. (2017). 10 Reasons Why Lifelong Learning is the Only Option. <https://www.gettingsmart.com/2017/01/20/10-reasons-why-lifelong-learning-is-the-only-option/>
54. Vargas, C. (2017). Lifelong learning from a social justice perspective 21. Education research and foresight working papers. <https://www.gcedclearinghouse.org/sites/default/files/resources/250027e.pdf>
55. World Bank (2019). Lifelong Learning. https://elibrary.worldbank.org/doi/10.1596/978-1-4648-1328-3_ch4.
56. Yang, J., & Valdés-Cotera, R. (2011). Conceptual Evolution and Policy Developments in Lifelong Learning. UNESCO Institute for Lifelong Learning. Feldbrunnenstrasse 58, 20148 Hamburg, Germany.
57. Yang, J., Schneller, S., & Roche, S. (2015). The role of higher education in promoting lifelong learning. UNESCO Institute for Lifelong Learning.
58. Žiljak, T. (2015). Obrazovanje i učenje odraslih. https://epale.ec.europa.eu/sites/default/files/obrazovanje_i_ucenje_odraslih_ziljak_epale.doc

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