

*PhD, Associate Professor Anatoliy Tkach*¹ 

Department of Economic Theory
Rzeszow University of Technology

Lifelong learning as integrational resource of knowledge economy

INTRODUCTION

It is an established fact that society is changing. The world economy is forging ahead with its ambitious attempts to transition from a manufacturing-heavy economic model to the Knowledge age. There are shifts in employment patterns as new industries replace the old ones. There is a change in the ethnic and age composition of our communities. Because of these changes, barriers to trade are coming down and we are now part of a global economy.

It is difficult to conceive that any country could be completely left out of the rapid progression into the Information Era. At the same time, the application and convergence of computing and communication technologies has accelerated the development of global business and the global market place. Technology is now an integral part of the workplace as well as of our homes, our communities, and the very way of living. We seek ways of addressing the need to become a Knowledge Society; we do not only face a bewildering mix of uncertainty, risk, insecurity and division, but also of opportunity.

The challenges of rapid change are all around us. They can be seen in radical shifts in the organization of industry, business and labor markets. They are apparent in the rapid changes in occupations and the demand for new skills, and manifest themselves in new technology and communication systems.

Gone are the days of a single career path for most people. These challenges feature in the need to meet increased competition, and in the requirement for new skills and capacities at work.

They are evident in the demand for new products and services and in the radical and far-reaching transformation of technology, information and communi-

¹ Address for correspondence: Department of Economic Theory, Rzeszow University of Technology; e-mail: tkach_aa@prz.edu.pl. ORCID: 0000-0002-7207-117X.

cations now in existence. These changes are having a great impact on individuals as they struggle to meet these challenges.

The purpose of the paper is threefold: to analyze the current challenges facing the economy of knowledge in the new economic conditions; to rethink the characteristics and to search for the effective use of the economy of knowledge to build a new economy; to show the problems complicating the task of developing effective formal and non-formal education, especially in light of the high level of changes in new technologies.

The novelty of the research is substantiating the thesis that knowledge is a specific resource, which, unlike all other economic resources, can be unlimited under the condition of the continuous nature of education.

DISCUSSION

As we have entered the 21st century, we are faced with an array of changes. The major ones are as follows: economic changes, changes in the areas of education, technological changes.

The notion that education provides training of a lifelong skill is again being challenged. This in turn has posed new challenges to the notion of “vocational training” (Bruner, 1996).

The number of universities included in the international rankings is a measure of the quality of training of the elite of specialists for innovative enterprises by the EU higher professional education, as evidenced in Table 1.

Table 1. International University rankings of the leading countries of the world

Countries	Rank SJTU (500 universities)	Rank THES (200 universities)
Germany	40	9
Canada	22	7
France	21	6
China	9	8
Finland	5	0
Ireland	3	1
India	2	3

Source: own elaboration.

The idea is to provide the student with a skill that would keep them economically fit. This is increasingly difficult. First, there is no such skill that could be permanently valid. Second, most vocational training programs are designed as a dead-end to learning. In most cases, they are designed against the need for lifelong learning.

It is also a world of new ideas. Success stories in an Information Era often hinge upon innovation and creativity. Ideas change very fast. The Tertiary Education Strategy outlines the goals and priorities it sees as necessary to meet these challenges and provide the means and opportunities for members of our society to become an active part of the Knowledge Economy (UNESCO, 2009).

One of the main features of the Knowledge economy is the use of knowledge as a specific economic resource in contrast to traditional resources. Traditional resources are a private good, while Knowledge is a public good that is consumed by the whole of the society, hence Knowledge is an unlimited resource.

Table 2. Properties of Knowledge economy resources

Traditional resources	Resources of the knowledge economy
Material flows and stocks	Intangible flows and stocks
Capital as a productive resource	Knowledge can give the property of capital to any factor of production
are reduced in the process of use	increase in the process of use
The effectiveness of resources is determined by their quality and use	Knowledge as a resource increases the efficiency of other factors of production
Opportunities to improve the quality of the workforce	Opportunities to increase the level of human capital accumulation
Private good	Public good
Limited	Unlimited
Diminished marginal utility	Network nature of resources and increasing marginal utility

Source: own elaboration.

Technological progress or more generally, knowledge creation, as the key factor for economic growth has become characteristic of today's global economy. Knowledge intensive activities and occupations have provided the majority of new jobs economies over the past 30 years. The demand side driver has come from increasingly sophisticated and demanding consumers and businesses, enabled by big supply side changes in new technologies and better-educated labor. Globalization has accelerated both the demand and supply sides.

In today's economy, the economic growth, development and progress of an economy are subject to investment in people, to the increased role of education and lifelong learning. Participating in lifelong learning, individuals adapt more easily to changes in the labor market and – face strong competition from the global economy more successfully.

The world ranking of countries with the strongest digital economy from 2008 to 2015 was headed by the Scandinavian countries – Norway, Sweden, and by Switzerland. They are followed by Denmark, Finland, Singapore and South Korea. Norway and Finland have enshrined access to the Internet in their laws as one

of the rights that the country must guarantee to its citizens.

Large countries that usually dictate fashion occupy lower positions in the ranking: the UK in the 8th position, the US in the 10th, Canada in the 12th, Japan in the 15th, Germany in the 17th, France in the 20th, China in the 36th.

Table 3. Involvement in lifelong learning of the population aged 25 to 64 years

Countries	Number of students continuously (%)	Aim to 2020 (%)	Deviation from landmark, %
Scandinavian countries and Great Britain	20–30	15	(+) 10-15
Netherlands, Slovenia, Austria, Spain, Ireland	10–20	15	(+) 5
Estonia, Cyprus, Luxembourg, Germany, Czech Republic, France	7–10	15	(-) 3-5
Bulgaria, Croatia, Greece, Romania, Turkey	up to 7	15	(-) 8

Source: (https://ec.europa.eu/eurostat/statistics-explained/index.php/Adult_learning_statistics; https://www.researchgate.net/figure/Percentage-of-the-adult-population-aged-25-to-64-participating-in-education-and-training_fig4_267368286).

In order to assess the scale of digital technologies, the authors of the rating have established more than 170 criteria, including the value of broadband Internet connection, intellectual property rights, and impersonal data held by MasterCard. The advantage of countries in the field of high technology is due to political will and better coordination. As an example, the system of electronic payment, which must move in parallel, consumers, service providers, creators of technology and command support systems. Among the countries showing rapid growth, the Philippines, Indonesia, and Malaysia stand out. It is expected that in the next four years they will rise significantly in this ranking. Knowledge has a network nature, which provides a positive external effect of its use and generates a new phenomenon of increasing marginal utility.

Globalization and developing a new economy require a growing number of completely new and evolving professions. This development puts pressure on a new paradigm in the learning systems, focusing on education, lifelong learning and forms of non-formal and non-conventional education. As society is constantly changing and its dynamics are very fast and fluctuating, the dynamics of Knowledge must follow the same intensive pace and a very high degree of adaptability to the actual conditions (Chenic, Stanef, 2011).

In the sphere of the competitiveness of the country, enterprises provide factors such as competition, openness to international trade and foreign direct investment, well-functioning markets, or secured property rights. Not every country can provide the conditions for such an economic environment that stimulate growth and innovation. The growing number of “Knowledge workers”, the loss of reassurances, the loss of familiar working structures and whole employment sectors, and the development of new employment contracts and forms of employment call

for lifelong learning to be efficient and practicable. This challenge extends far beyond the economic field (Putnam, 1992).

The modern world and our societies everywhere are challenged by socio-economic shifts in a global environment of escalating change. At the same time, changes are occurring which challenge democracy and social coherence.

Technology and globalization tend to alter the relationship between worker and employer in two senses. On the one hand, they raise the bar on the qualifications for employability and, on the other, they sever the ties between incumbent employee and any given employer. The decision of a society to organize its educational system in accordance with the concept of lifelong education must be based upon manifold psychological, economic, and political factors. The combination of economic globalization and the diffusion of technology into the workplace has forced both employers and employees to come to grips with the need for continuous upgrading of workforce skills and competencies.

Any employment policy or strategy should be developed taking into account other macroeconomic policies, and especially educational policies. The European Union's Europe 2020 strategy sets out a vision of Europe's social market economy for the 21st century, with a strong focus on skills and lifelong learning. It shows how the EU can overcome economic crisis and turn it into concrete and tangible actions to accelerate the transition to more sustainable, inclusive and enduring economies delivering high levels of employment, productivity and social cohesion. Lifelong learning must cover learning from the pre-school to post-retirement age, including the entire spectrum of formal, non-formal and informal learning.

It must be understood that Knowledge can be acquired and skill-sets developed anywhere – learning is unavoidable and happens all the time. However, lifelong learning is about creating and maintaining a positive attitude to learning both for personal and professional development. Lifelong learners are motivated to learn and develop because they want to: it is a deliberate and voluntary act. Lifelong learning can enhance our understanding of the world around us, provide us with more and better opportunities and improve our quality of life; in this context it is the individual that should be the subject of learning, highlighting the importance of an authentic equality of opportunities, and quality in learning (World Bank, 2003).

The revival of lifelong learning was realized with the emergence of a Knowledge-based economy based on human capital, i.e., on Knowledge acquired by humans. Therefore, HRD (Human Resources Development) through lifelong learning as well as the issues of "humans" and "Knowledge" are being emphasized, for society based on Knowledge is impossible to envision without the concomitant realization of a lifelong learning society. The learning economy advocated by OECD was married to the learning society espoused by UNESCO, to give birth to a global revival of lifelong learning that sprang from Europe. The Knowledge society and the learning society are like two sides of the same coin.

In the 1980s, education and training were directed toward the labor market and based primarily in schools. Europe rekindled the light of lifelong learning along with the advent of the Knowledge Society. The European Community designated the year 1996 as the year of 'Lifelong Learning in Europe' and declared A Memorandum on Lifelong Learning in 2000. These measures were implemented because of the conviction that a successful transition to a Knowledge-based Society should be accompanied by the transition to a lifelong learning Society.

Peter Drucker argued, "There is nothing as useless as doing efficiently that which should not be done at all" (Drucker, 1994). Adding new media and new technologies to existing practices will not change the mindsets that learners will acquire in our formal educational institutions and there may be big obstacles to engaging in lifelong learning. Moving beyond the "gift-wrapping approach" requires that we explore fundamentally new possibilities and limitations of computational media on how we think, create, work, learn, and collaborate. It is simply not good enough to spend money on new technologies and then to use them in old ways. New tools will not just help people do cognitive jobs more easily but in the same way they used to, but they will also lead to fundamental alterations in the way problems are solved. A lifelong learning perspective requires that we change mindsets. This will include, for example, that we notice and understand breakdowns and symmetry of ignorance as opportunities rather than as things to be avoided; that teachers understand their roles not only as truth-tellers and oracles, but as coaches, facilitators, and mentors; and that knowledge is not presented as a commodity to be acquired or delivered, but as a human struggle to understand and as a source to deal with personally meaningful problems. The future of how we live, think, create, work, learn, and collaborate is not out there to be "discovered" – it has to be invented and designed. Mindsets grounded in seeing learning as an important part of human lives will be an integral part of the future (Dohmen, 1999).

What is particularly noteworthy here is the balance that was struck between lifelong employability and active citizenship. Two central gears upon which the machinery of lifelong learning depends are the elements of lifelong employability and active citizenship, which, in turn, are powered by the realization of lifelong learning. In addition, Europe is currently proceeding with the National Action Plan to implement the goal of "Making Lifelong Learning a Reality", which is the subject of discussion today. Unprecedented change has swept the world in the past decades prompting international organizations and European countries to revive the idea of lifelong learning. Societies worldwide are in the process of massive growth, as we evolve further away from our shared agrarian roots into an industrial and Knowledge-based society (Dahlman, Zeng, Wang, 2007). The economy, too, is being changed from labor-intensive to capital-intensive, and finally on to knowledge and information-intensive. Our very understanding of the nature of work is shifting, as the labor force moves from blue-collar occupations, to white and finally on to gold. In the process of shifting, however, the economic paradigm

remained that of a labor-intensive, resource-based economy as in the past. Knowledge is the powerhouse of growth, but our knowledge reserves are decreasing. The life cycle of knowledge is growing ever shorter, and therefore knowledge, which is useful today, may well be redundant tomorrow, while the human life cycle is conversely being extended. The problem here is that school education tends to adhere to the paradigm of the past.

Change does not only occur in knowledge per se. In the context of the knowledge era and the high demands for knowledge workers, all sectors of the economy are reviewing the patterns of competencies acquired by their knowledge workers. As new industries emerge and as new work cultures evolve, new knowledge-based literacy is required. The frequency in which people change their occupations has increased. In Europe, an average person experiences 3 to 4 occupations in lifetime (Natividad, Mayes, Choi, Spector, 2015). The situation in the US is similar. It is increasingly difficult for anyone to foretell his/her career path in the future. It is therefore commonplace for a person to learn, mid-career, a new trade. Even if the person remains in the same occupation, the change in the technology, clients, management styles and environments all cause changes that demand continuous learning.

With some exceptions, higher education institutions are not yet very active in lifelong learning, despite the fact that the economic crisis has brought an important increase in the demand for continuous training. The benchmark is that 15% of the population aged 25–64 should participate in lifelong learning by 2020. Only seven Member States exceeded the benchmark of 2020. There are large differences in participation between Member States; the Scandinavian countries and the UK, the best performers, achieve systematically high and increasing participation rates, reaching 20–30%. Data put the Netherlands, Slovenia, Austria, Spain and Ireland in the next group, with participation rates between 10–20% whereas Estonia, Cyprus, Luxembourg, Germany, Czech Republic and France are at 7–10% participation rate. Bulgaria, Greece and Romania as well as Croatia and Turkey have recorded little or no progress in improving their extremely low levels of participation.

There are different patterns of adult participation in lifelong learning by age group. Age Participation of adults aged 50-to-64 is considerably lower. Four member states: Denmark, Finland, the United Kingdom, and the Netherlands along with Iceland and Norway – which are the best performers in Europe for adult participation in lifelong learning overall – are also the best performers but with considerably lower participation rates as concerns this age group.

The knowledge society is no longer a pipe dream but a current reality.

The concept of lifelong learning shifts responsibility for education and learning to the individual, focusing on the development of individual capabilities and the capacity to learn; it implies a shift from traditional education institutions to diverse learning opportunities that are more process and outcome oriented.

CONCLUSION

It is difficult to exhaust all the potential challenges to education in the Information Era. There will be fundamental changes in economy and society. Changes in education will also be fundamental. In today's society, human and intellectual capital is more important than physical and financial capital. In a knowledge-based economy, citizens of all nations need to embrace the practice of lifelong learning, and nobody should be excluded in the quest for it. Lifelong learning is still a difficult subject to deal with despite its acknowledgement worldwide as an important policy issue. The economic perspective is just one of the perspectives. Nevertheless, there is general public agreement that the educational system must be overhauled to adapt to the new demands of today's world. It is difficult to conceive that any country could be completely left out of the rapid progression into the Information Era.

Practical recommendations include:

- the employment strategy should be developed taking into account the educational policy,
- training programs should include a positive attitude towards personal and professional development throughout life,
- a successful transition to a knowledge-based society should be accompanied by a transition to a society of continuous education,
- the life cycle of knowledge is getting shorter, therefore, higher education institutions should actively participate in lifelong learning.

REFERENCES

- Bruner, J. (1996). *The Culture of Education*. Cambridge: Harvard University Press.
- Chenic (Cretu), A.S., Stanef, M.R. (2011). Interconnection between education, innovation and labor market requirements in the context of Europe Strategy 2020. *Journal of International Scientific Publications*, Vol. 9, Part 1.
- Dahlman, C.J., Zeng, D.Z., Wang, S. (2007). *Enhancing Chinas competitiveness through lifelong learning*. Washington, DC: World Bank Publications.
- Dohmen, G. (1999). *The Future of Continuing Education in Europe*. Bonn: German Federal Minister of Education and Research.
- Drucker, P.F. (1994). The Age of Social Transformation. *The Atlantic Monthly* (November), 53–80.
- Natividad, G., Mayes, R.J., Choi, J., Spector, J.M. (2015). Balancing stable educational goals with changing educational technologies: challenges and opportunities. *e-mentor*, 1 (58), 83–94. DOI: 10.15219/em58.1160.
- Putnam, R. (1992). *Making Democracy Work. Civic Traditions in Modern Italy*. Princeton: Princeton U.P.

- UNESCO (2009). *Global Report on Adult Learning and Education*. Germany: Institute for Lifelong Learning (UIL).
- World Bank (2003). *Lifelong Learning for a Global Knowledge Economy*. Washington, DC: World Bank.

Summary

The paper examines the meaning and the main features of the knowledge economy. It also analyses present-day challenges for the knowledge economy under new economic conditions.

Research indicates arguments justifying the thesis that knowledge is a specific resource, which, unlike all other economic resources, can be unlimited under the condition of the continuous nature of education.

Modern problems of market economy require deep rethinking and effective use of the characteristics of the knowledge economy for building new market relationships. Current economic problems will be successfully solved if one carefully considers the features of the Knowledge economy. The expanding Internet, ever more powerful mobile devices, and other innovations make the task of designing effective formal and informal learning challenging, especially in light of the high rate of change in these new technologies.

Keywords: lifelong learning, innovations, education, knowledge-based economy, human capital, innovative economy.

Uczenie się przez całe życie jako czynnik integralny gospodarki opartej na wiedzy

Streszczenie

Artykuł poddaje pod dyskusję znaczenie i główne cechy gospodarki opartej na wiedzy. Analizuje również współczesne wyzwania dla gospodarki opartej na wiedzy w nowych warunkach gospodarczych. Badania wskazują argumenty uzasadniające tezę, że wiedza jest specyficznym zasobem, który, w przeciwieństwie do wszystkich innych zasobów gospodarczych, może być nieograniczony pod warunkiem ciągłego charakteru edukacji.

Współczesne problemy gospodarki rynkowej wymagają głębokiego przemyślenia i efektywnego wykorzystania cech gospodarki opartej na wiedzy w tworzeniu i kształtowaniu nowych relacji rynkowych. Aktualne problemy gospodarki zostaną pomyślnie rozwiązane, jeśli weźmie się pod uwagę cechy gospodarki opartej na wiedzy. Rozwijający się Internet i inne innowacje sprawiają, że zadanie projektowania skutecznego uczenia się formalnego i nieformalnego staje się wyzwaniem, szczególnie w świetle wysokiej dynamiki zmian w sferze nowych technologii.

Słowa kluczowe: uczenie się przez całe życie, innowacje, edukacja, gospodarka oparta na wiedzy, kapitał ludzki, innowacyjna gospodarka.

JEL: D80, D83.