

ECONOMY COMPETITIVENESS AND MODERN PEDAGOGICS DEFINITIONS CORRELATION

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Abstract. The purpose of the paper is to understand and explain economy competitiveness and modern pedagogic definition correlation. Education for entrepreneurship or economic development, and education for environmental sustainability, or sustainable development are seen as arguing goals in education reforms. Teachers today also encounter a number of other and equally important challenges in their work, such as educating youth for insecurity, tolerance, new technologies, peace and active citizenship, to mention but a few. National economic competitiveness is linked to intellectual and capital and is driven by knowledge, and innovation. Sustainable development requires an understanding of the complexity of the global ecosystem and of creative problem-solving the solutions searching to 'wicked problems' such as that of reconciling economic activity with a sustainable environment. *Methodology.* It is used the data from publications and reports of the European Commission, OECD, World Bank, World Economic Forum, UNESCO, International Journals in Economics and Pedagogic: American Economic Review, Journal of Education Policy, Journal of Education Change, European Journal of Education. In the article the descriptive analysis, supported by the quantitative analysis is applied. *Results.* It was defined that national economic competitiveness is linked to capital driven by knowledge and innovation. It was analysed the formation of Global Competitiveness Index (GCI) which is made up of over 110 variables. According to the GCI Switzerland is the most competitive economy in the world in 2015. It is highlighted the following overarching needs to: give a higher profile to the notion of interdependence: how closely one part of an ecosystem is linked to and depends upon another; making humanity more aware of its own fragility on this planet; highlight the role of cooperation: problems faced will only be resolved by international cooperation; develop the notion of a global public good: environmental sustainability can only be achieved by trans ceding particular national or individual needs. *Practical implication.* The results of the investigation may be used in teaching programs of Ukrainian universities, institutes and schools. *Value/originality.* Received conclusions will help Ukrainian pedagogues to understand the importance of new conception of knowledge, innovation and intellectual capital.

Key words: economy competitiveness, pedagogic approaches, Global Competitiveness Index, knowledge-based economy, intellectual capital.

JEL Classification: A13, I25, O34

1. Introduction

There are two change forces affecting education today. Firstly, raising the quality of education that is driving human potential is seen as imperatives in knowledge societies that aim for sustainable economic growth and prosperity. Secondly, education is also viewed as one of the instruments for raising the level of understanding of the fragility of the global ecological situation.

Education for entrepreneurship or economic development, and education for environmental sustainability, or sustainable development are seen as arguing goals in education reforms. Teachers today also encounter a number of other and equally important

challenges in their work, such as educating youth for insecurity, tolerance, new technologies, peace and active citizenship, to mention but a few.

In order to educate young people to play a role in both future economic competitiveness and environmental sustainability, education policies have to be based on a proper understanding of these key concepts. In any knowledge-based economy people need to be able to work with knowledge, collaborate with other people and adapt to unpredictably changing situations. National economic competitiveness is linked to intellectual and capital and is driven by knowledge, and innovation. Sustainable development requires an understanding of the complexity of the global ecosystem and of

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creative problem-solving to solutions searching to 'wicked problems' (Murgatroyd, 2010) such as that of reconciling economic activity with a sustainable environment.

2. Importance of Economic Competitiveness in Educational Policies

Competitiveness and sustainability have become buzz words in the discourse on global prosperity and development strategies. One popular indicator used in ranking the performance of nations is their ability to compete in world markets. Position in the international rankings of national economic competitiveness has indeed become a pretext for economic and labour market reforms in many economies. National education policies aim at helping their economies to become more competitive. Competitiveness as one aspect of the twin challenge of nations is, however, not a clear concept for either policy-makers or education practitioners. Sometimes it refers to competitiveness in education which means the effectiveness and efficiency of a national education system vis-à-vis other education systems (Sahlberg, 2006; West, 1993). In other cases, education for competitiveness implies a certain kind of education that will increase employability and productivity in national and world markets. This is closely linked to the 'competitiveness of education' interpretation since better education improves employment opportunities because of its positive impact on knowledge development and hence on productivity. In this paper, we look at education as one of the main drivers of human capital development and thereby of national economic competitiveness.

Again, it means better quality of, broader access to and more mobility within education. But it also means considering what type of education is needed to cultivate those qualities that are necessary in a sustainable knowledge-based society.

All democratic nations wish sustainable economic development and prosperity for the well-being of their inhabitants. According to Porter et al. (2008), prosperity is driven by the productivity of an economy which, in turn, depends on the value of goods and services produced per unit of national human capital and national resources including those derived from 'natural capital'. Both the value of a nation's products and services and the efficiency with which they are produced determine productivity. Competitiveness is measured by productivity.

Contemporary economic theories and empirical evidence suggest that many things matter for competitiveness (Porter et al., 2004; 2008). The New Global Competitiveness Index (GCI) framework designed by the World Economic Forum (WEF) that covers more than 130 economic systems incorporates a complex set of these factors in order to help policymakers to explain the strengths and weaknesses of productivity in their economies and to craft policies accordingly (Table 1).

Table 1

Global competitiveness index 2015

Rank	Economy	Value
1	Switzerland	5,8
2	Singapore	5,7
3	USA	5,6
4	Germany	5,5
5	Netherlands	5,5
6	Japan	5,5
7	Hong Kong SAR	5,5
8	Finland	5,5
9	Sweden	5,4
10	United Kingdom	5,4

Made by the author according to: (Competitiveness Ranking, 2016)

According to the table above Switzerland is the most competitiveness economy in 2015. The Global Competitiveness Index (GCI) is made up of over 110 variables, of which two thirds come from the Executive Opinion Survey, and one third comes from publicly available sources such as the United Nations. The variables are organized into twelve pillars, with each pillar representing an area considered as an important determinant of competitiveness (The Global Competitiveness Report, 2012).

The New GCI aims to reveal the underlying causes of productivity. Three domains influence national economic competitiveness in this framework: endowments, macroeconomic competitiveness, and micro-economic competitiveness. Endowments affect productivity through geographic location, natural resources, or size of the domestic market. Micro-economic factors operate on firms and hence drive productivity. It is the macro-economic domain that, through its indirect influence on productivity of firms in an economy, becomes relevant for education policies. Macro-economic competitiveness consists of two distinct areas: macro-economic policy, and social infrastructure and political institutions. The latter, as described in contemporary literature, includes basic human capital, i.e. well-educated and skilled people, quality of political institutions, and the rule of law.

Empirical research on economic growth has found social infrastructure and political institutions to be the most important factors for long-term differences in prosperity (Bils & Klenow, 2000; Glaeser et al., 2004). The New GCI as a measure includes enrolment rates in primary, secondary and tertiary education and the quality of the education system in general and of mathematics and science education in particular. These aspects of human capital fall into the province of national policies.

Although, economic competitiveness determined by the New GCI and other global indices, does not suggest any directions for pedagogies in the schools of competitive knowledge societies.

Another element of the twin challenge facing nations is the global ecological threat. After three decades of mounting concern about global environmental problems,

the United Nations proclaimed a Decade of Education for Sustainable Development in 2005 to highlight the fact that 'education and learning lie at the heart of approaches to sustainable development, a powerful concept that could ignite the interests of people around the world to shape a more sustainable future' (UNESCO, 2005, p. 26).

Five years into the Lisbon Strategy, economic competitiveness became closely tied to the challenge of preparing the next generation of students to deal with global threats to the future sustainability of our economic, political and social systems and the ecological systems upon which it depends. These threats arise from the demographic and technological overload of the planet. The priority given to increasing national economic competitiveness is seen by many as contributing to rather than solving the problem of ensuring a sustainable global environment (Rees, 2003; Steffen et al., 2007).

This 'vast campaign' seems to have started in the last ten years. It is generating a new vocabulary that include 'global social-ecological system', 'tipping points', 'population overshoot', 'global warming', 'rising sea levels', 'fossil fuel over-dependence', 'carbon footprints', 'resource conflicts' and others. However, schools are slow to incorporate new scientific, social and environmental problems into pedagogy.

The inter-disciplinary study of the interaction between complex social and ecological global systems has made progress in research communities but there is still what Doppelt (2008) calls widespread 'systems blindness' among economists, politicians, businesses and education communities that must be addressed urgently. The resilience of the global financial system has been challenged by the impact of excessive credit mismanaged by reputable banks and fraudulent traders. But coverage of the disturbance in the financial system is not linked to the long-term systemic pathologies that arise from the interaction of human and ecological systems.

3. Traditional pedagogy methodology and different learning objectives

Fortunately, the qualities and the pedagogies that prepare young people to make a creative and collaborative contribution to national competitiveness and address global ecological challenges for a sustainable future are similar. Teaching and learning for uncertainty, risk-taking, ingenuity, collaboration and creativity are means that can focus on the different ends of economic competitiveness on the one hand and on global social and ecological sustainability on the other. In curricular terms, whether the 'subject' to be studied is entrepreneurship or sustainable development the most appropriate pedagogies will have much in common. Both require a high level of ingenuity, creativity and problem-solving.

The scientists, policy-makers and consumers of the 2000s now being prepared in formal education institutions will meet unprecedented economic and ecological system

challenges in their adult professional lives that will require concerted action at every level, from local to global. Many see the ends of competitiveness and sustainability as conflicting. Manteaw (2008), for example, discusses education for sustainable development and social responsibility as emergent discourses that need conscious efforts to align their ideals. If education for sustainable development is to make a significant contribution to educational thinking, he claims, it does so recognizing that the current market-oriented agenda related to formal schooling contradicts the ideals of education for sustainable development. In an analysis of the role of education in promoting a sustainable society, Bottery (2008) challenges an unquestioning commitment to economic competitiveness by highlighting the following overarching needs to:

- give a higher profile to the notion of interdependence: how closely one part of an ecosystem is linked to and depends upon another; making humanity more aware of its own fragility on this planet;
- highlight the role of cooperation: problems faced will only be resolved by international cooperation;
- develop the notion of a global public good: environmental sustainability can only be achieved by transcending particular national or individual needs.

He advocates a 'sustainable school' in which longer impact horizons, environmental sustainability, an awareness of global fragility, ecological interdependence, global cooperation and a concept of a public good are embedded. This contrasts with the core values of economic growth and global competitiveness in the Lisbon Strategy, but it is a vision that needs a similar creative and innovative pedagogy for collaboration and arguably for a particular and targeted form of competitiveness if it is to be pursued. For example, competitiveness and creative ingenuity can promote the growth of sustainable technologies as well as high-carbon emitting technologies that produce non-essential consumer and luxury goods.

Competitiveness and ingenuity will also be needed to create strategies that re-stabilize global systems and stimulate peoples' will to change to a morality, mindset and lifestyle implied by the 'overarching needs' spelt out by Bottery (2008).

It is important to realize the sheer scale of the challenge of turning educational policy into practice at the key interface between millions of learners and hundreds of thousands of their formal teachers. It is also important to understand the intensification of teachers' work and raised expectations of their performance arising from the greater demands for accountability in recent years.

Only if new priorities are signalled at the political level can the necessary context be provided to move towards pedagogies that are appropriate for the decades ahead. Both pedagogy and curriculum must be seen within the overall values and goals of a given education system.

Entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk

taking, as well as the ability to plan and manage projects in order to achieve goals. This supports everyone in day-to-day life at home and in society, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity. Risk-taking, creativity and innovation are, as expressed in the quotation above, often seen as features of a special form of curriculum, in this case entrepreneurship education. But this discourse needs to be extended to all areas of education. Even more importantly, ingenuity and creativity should also be woven into the culture of schooling.

4. Importance of Education, Innovation and Cooperation

New conception of knowledge. Formal education, especially at pre-tertiary level, has long been criticized for static conceptions of knowledge and learning (Lehtinen, 2004). Traditionally, the foundation of knowledge was based on a positivist scientific method. Therefore knowledge was viewed as objective and knowledge-formation as a linear, cumulative process free from subjective values and interpretations. Knowledge is nowadays understood differently in economics, mathematics, natural sciences, neuroscience, cognitive sciences and information technologies. It is seen as relativistic and diverse in terms of its interpretations. Furthermore, according to Capra (2002), it is created through multiple processes, including hermeneutic and subjective 'scientific' methods alongside the systems analytical advances in understanding non-linear dynamics of complex life, and human and ecological systems.

This shift in the paradigm of knowledge has created a challenge for education. Teaching and learning in schools should concentrate not only on mastering the basics and achieving predetermined learning standards but also on coming up with alternative perspectives, new ways of constructing knowledge and creating ideas that have value.

Innovation importance. Innovation involves the extraction of economic and social value from knowledge. It puts ideas, knowledge and technology to work in a manner that brings about a significant improvement in performance. It needs not just an idea but rather an idea that has been made to work. This means that innovation and entrepreneurship are closely interdependent. Therefore, living in and working

for a world of innovations requires different attitudes, knowledge and skills from the citizens. Technological adaptation and innovation have been the main drivers of economic growth in developed countries since World War II and are also proving to be important factors in many developing countries. Innovative models of wealth creation, referred to as 'natural capitalism', are emerging in the business world. They illustrate how environmental responsibility can be highly profitable. In order to be able to contribute successfully to the development of innovation in the sustainable knowledge economy, education systems also need policies that encourage working with and learning from innovations.

Intellectual capital. Success in the world of work and living in a world of global risks require different knowledge and skills. Coping with increasing amounts of knowledge has changed the ways we think about education and schools. Individual performance and inventions created by one person only have given way to collective intelligence, shared knowledge and team-based problem-solving. Successful economies and highly creative communities are based on the idea of strategic alliances rather than raw competition for markets and clients. Indeed, sustainable development and economic competitiveness require a stronger focus on the development of interpersonal skills and intellectual capital throughout the cycle of education. More specific intellectual capital that is necessary in productive group processes, whether in or out of school, is becoming more important in the schools of those countries that are genuinely concerned about their economic competitiveness and sustainable development. Competition and collaboration are central concerns in an exploration of global economic and environmental futures and related pedagogies.

Both collaboration and competition confer evolutionary advantage. In-group collaboration to give comparative advantage to one group over another is a key to economic as well as political success in market-based democratic societies. It also advantages individuals within the groups who benefit from a sense of identity and belonging. Increasingly at the local level of schooling, the creation of collaborative cultures in schools is seen as offering competitive advantage in the quasi-market that sets schools in competition for parental choice; even within classrooms modern pedagogy based on constructivist principles of learning is increasingly characterized by collaborative

Table 2
The models of learning

	Models of learning		
	Cooperation	Competition	Individualistic
Interdependence	Positive	Negative	None
Interaction pattern	Mutual encouragement	Oppositional	None
Outcome 1	High effort to achieve by all	Low effort to achieve by many	Low effort to achieve by many
Outcome 2	Positive relationships	Negative relationships	No relationships
Outcome 3	Psychological health	Psychological illness	Psychological pathology

Source: (Johnson D. & Johnson R., 1989)

student projects and problem-solving activities. Creativity in the classroom has long stressed the efficacy of such activities both for motivating learners and for promoting '21st century skills' needed for labour and enterprise in the knowledge economy. Every school population and every classroom group are an 'in-group' and if school leaders and teachers are skilful in creating a positive culture they can provide individual pupils with the security that comes from a sense of identity and belonging.

Excessive in-group competition and emphasis on win-lose relationships can obviously damage such benefits, particularly for the losers. In their seminal work on cooperative learning, Johnson and Johnson (1989) summarize the differences between three forms of social interdependence (Table 2), stressing the intrinsic benefits of cooperative learning and the negative effects of the other two.

Research evidence shows the broad range of educational benefits of cooperative learning that is based on the social interdependency theory.

Together with academic gains, students are also able to improve their 'soft' skills, such as helping behaviours and problem solving, and experience safety and mutual trust.

5. Conclusions

During the investigation it was defined that national economic competitiveness is linked to capital driven by knowledge and innovation. It was analyzed the formation

of Global Competitiveness Index (GCI) which is made up of over 110 variables, of which two thirds come from the Executive Opinion Survey, and one third comes from publicly available sources such as the United Nations. The variables are organized into twelve pillars, with each pillar representing an area considered as an important determinant of competitiveness. According to the GCI Switzerland is the most competitive economy in the world in 2015. The New GCI includes enrolment rates in primary, secondary and tertiary education and the quality of the education system in general and of mathematics and science education in particular. These aspects of human capital fall into the province of national policies.

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- develop the notion of a global public good: environmental sustainability can only be achieved by transcending particular national or individual needs.

It is defined three main factors of economy competitiveness rising: new conception of knowledge; innovation; intellectual capital.

Understanding importance of facts above will help pedagogues to change their approaches according to modern economy needs and challenges.

References

- Bils, M. & Klenow, P. (2000). Does schooling cause growth? *American Economic Review*, 90, p. 328–335.
- Bottery, M. (2008). Redefining the Focus of Educational Leadership: the case forenvironmental sustainability (unpublished manuscript).
- Competitiveness Ranking. Retrieved January 10, 2016 from <http://reports.weforum.org/global-competitiveness-report-2015-2016/competitiveness-rankings/>
- Doppelt, B. (2008). *The Power of Sustainable Thinking* (London, Earthscan Publishing).
- Glaeser, E., La Porta, R., Lopez-De -Silanes, F. & Shleife, A. (2004). Do Institutions Cause Growth? NBER Working Paper No. 10568 (Cambridge, National Bureau of Economic Research). UNESCO, 2005, p. 26.
- Hargreaves, A. & Shirley, D. (2009). *The Fourth Way: the inspiring future for educational change.* – New York, Sage.
- Johnson, D. & Johnson, R. (1989). *Co-operation and Competition: theory and research* (Minneapolis, Interaction Book Company).
- Lehtinen, E. (2004). Koulutusjärjestelmä suomalaisen yhteiskunnan muutoksessa [Education system in changing Finnish society], in: Artikkelikokoelma tutkimushankkeesta 'Sosiaaliset innovaatiot, yhteiskunnan uudistumiskyky ja taloudellinen menestys' (Helsinki, Sitra), p. 520–590.
- Manteaw, B. O. (2008). When businesses go to school: neo-liberalism and education for sustainable development, *Journal of Education for Sustainable Development*, 2, p. 119–126.
- Murgatroyd, S. (2010). 'Wicked problems' and the work of the school, *European Journal of Education*, 45, p. 259–279.
- Porter, M., Delgado, M., Ketels, C. & Stern, S. (2008). Moving to a new Global Competitiveness Index, in: M. Porter & K. Schwab (Eds). *The Global Competitiveness Report 2008–2009* (Geneva, World Economic Forum) p. 43–64.
- Porter, M., Schwab, K., Sala -I-Martin, X. & Lopez -Claros, A. (Eds) (2004). *The Global Competitiveness Report 2004–2005* (New York, Oxford University Press).
- Rees, M. (2003). *Our Final Century* (London, Heinemann).
- Sahlberg, P. (2006). Education reform for raising economic competitiveness, *Journal of Educational Change*, 7, p. 259–287.
- Steffen, W., Crutzen, P. J. & McNeill, J. R. (2007). The anthropocene: are humans now overwhelming the great forces of nature? *Ambio*, 36, p. 614–621.

Sahlberg, P. (2009). Learning first: school accountability for a sustainable society, in: J. C. Couture, K. D. Garipey & B. Spencer (Eds) Educational Accountability: professional voices from the field (Rotterdam, Sense Publishing) p. 1–22.

The Global Competitiveness Report 2011–2012. Retrieved January 8, 2016 from http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf

West, E. (1993). Education and Competitiveness. Discussion Paper No. 93-02 (Toronto, Government and Competitiveness School of Policy Studies, Queens University).

Светлана ТОЛОЧКО

КОРРЕЛЯЦИЯ ПОНЯТИЙ КОНКУРЕНТОСПОСОБНОСТИ ЭКОНОМИКИ И СОВРЕМЕННОЙ ПЕДАГОГИКИ

Аннотация. *Цель статьи* состоит в определении корреляции между понятиями конкурентоспособности экономики и современной педагогики. Система образования, которая готовит специалистов в области экономического развития и предпринимательства, отличается от образования, целью которого является достижение устойчивого развития и экологической стабильности. На сегодняшний день современные преподаватели имеют богатый инструментарий, который способствует развитию толерантности, надежности, ответственности и т.д. Что касается национальной конкурентоспособности страны, она взаимосвязана с интеллектуальным капиталом, в основе которого лежат знания и инновации. Стабильное развитие требует понимания сложности глобальных экосистем и разработки комплекса мероприятий по решению проблем, связанных с экономическим развитием. *Методика.* Для проведения исследования проанализированы публикации и отчеты Европейской Комиссии, ОЭСР, Всемирного банка, Всемирного экономического форума, ЮНЕСКО, международных журналов по педагогике и экономике. В работе были использованы методы описательного и количественного анализа. *Результаты.* В результате проведенного исследования было определено, что национальная конкурентоспособность экономики связана с капиталом, в основе которого лежат знания и инновации. Проанализирован Глобальный экономический индекс, состоящий из 110 переменных. В соответствии с данной методикой в 2015 году Швейцария признана наиболее конкурентоспособной страной. Предложены следующие рекомендации: повысить уровень взаимозависимости понятий конкурентоспособности экономики и современных методов обучения; развить понятие глобальной общественной продукции; способствовать кооперации педагогической и экономической сфер. *Практическое значение.* Результаты исследования могут быть использованы в образовательных программах украинских университетов, институтов и школ. *Значение/оригинальность.* Полученные выводы помогут украинским педагогам понять важность новой концепции знаний, инноваций и интеллектуального капитала.