

KNOWLEDGE-BASED SOCIETY AS A FACTOR OF SOCIAL, ECONOMIC AND CULTURAL DEVELOPMENT

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ABSTRACT

The article focuses on the impact of integration processes on the formation of the knowledge-based society. The author highlights that the reforms in the Latvian educational system on the whole have been inconsiderate, which as a result unfavourably affects the quality of tertiary education system. Due to inconsiderate secondary school reforms, Latvian tertiary education establishments fail to prepare a sufficient number of specialists meeting the needs of national economy; this especially refers to specialists in engineering and natural sciences.

Key words: globalisation, integration, knowledge-based society, educational system, reform,

The process of globalisation and its impact on the economic, social and political life of the particular country is being widely debated in the Baltic States and other parts of the world. There are both supporters and ardent opponents of globalisation.

Both the sides have to be aware that this process is irreversible. It is based on the contemporary level of production and its objective development trends. Globalisation is developing by its own objective rules, which are impossible to change, irrespective of the sides we are taking. This, however, does not mean that we have to passively wait for what will happen. It is necessary to actively act to investigate the regularities of development of globalisation, and, based on the results of research, to establish the lines of activities that would ensure each country its place among other nations benefiting or at least not turning out to be losers from the globalisation process.

We have to understand that there will always be those who will benefit and those who will lose in this process. Any reforms or changes that are positive for the society on the whole may be negative for individual members of the society or group in particular. For example, before the transition to the market economy, most of the inhabitants of the Baltic States, inspired by the image of the western world, hoped to see rapid improvements for every individual member of the society. However, it turned out that there were many, who gained from this transition, and at the same time, also many, who lost.

We have to remember that at also that time there were opponents to the market economy, who indicated that there are advanced states in the world existing alongside with under-developed countries, despite the operation of the market economy in both these groups of countries. Why are these countries so different? This can be explained by the so-called X-factor concept developed by H. Leibstain. The concept is based on the judgement that within the framework of one and the same economic system, using

the same resources and being put in the same conditions, the results can be very different. Therefore it is possible to speak about some factor X, which determines the result. The effect of this factor is due to the fact that there is not strictly determined relationship between the results, resources, system of economic relations, and specific conditions. People, companies and nations may behave differently. Under certain conditions the behaviour may be active and passive, adequate or inadequate. Achievement of a maximally positive result under given conditions requires a particular type of behaviour [1, p. 353; 2, pp. 303 – 307].

Globalisation connects people, organisations, markets, technologies, finances, information and governance in a common system of interrelationships across national borders. Globalisation will demonstrate global operation of two market principles, which over the last 10 – 15 years have ranked many economic subjects in the Baltic States into winners or losers. The basic principle is seemingly very simple; it is necessary to produce what the market demands. At the same time, this has to be done at the costs, which the market accepts. It is not important, what we want or can produce, what we consider to be useful or not. Therefore it is necessary to seriously analyse fundamental global economic development trends, it is necessary to forecast what kind of economic activity will yield the best result, it is necessary to evaluate the potential of the country and to establish main directions for concentrating its material and intellectual resources.

Global development trends testify to the fact that there is a requirement for education in terms of life-long learning and formal education systems, owing to relevant political and economic changes taking place in the current historical period that are presently difficult to evaluate unequivocally, at the same time, posing specific requirements to the whole society on the whole.

The development of science and technology has

created preconditions for a new phase in the economic development of society – the post-industrial society. In this phase knowledge becomes the decisive production factor. The 21st century is marked by a constant increase of the impact of globalisation on every person's everyday life and the speed of overcoming time and spatial borders. Under such conditions the role of education is subject to change, it acquires a wider function to help a person to successfully adapt to the new environment. Knowledge and information turn into a strategic resource. Production growth with regard to manufacturing goods in advanced economies is declining. At the same time, "knowledge-based industry" is gaining pace. Production of services becomes the main sphere of economic activity in the post-industrial society; the decisive factor being information and the decisive social group – owners of information. Thus it is possible to speak about the so-called knowledge-based (or information) society, the principal determinant of which is knowledge and the skill how to use it.

Nowadays in formal and informal education it is relevant how a person can perceive and use the result of education, not the content of education itself. Without denying the relevance of the content of education, it has to be noted that the ability to use the skills acquired in the educational process are more important than the content. It means that high self-esteem, ability to work in a team, argumentation skills and ability to express opinion are more relevant than the scope of theoretical knowledge mastered but which the particular individual cannot or is unable to practically apply.

Of course, all countries have not exhausted their potential for industrial and economic development, the Baltic States including. However, in advanced countries worldwide it is possible to speak about a more or less marked post-industrial society. It directly affects and will also affect the economic position of the Baltic States and other countries (e.g., Bulgaria, Rumania etc.) in the future. When involving in global (initially, European) economic processes, it is necessary to orient to the requirements of this market. In this connection it is possible to speak about two aspects. The first – what goods are (will be) required in the global market and what can the Baltic States or any other country (e.g., Bulgaria, Rumania etc.) offer.

The advanced countries' markets require high-tech products. The demand for high technologies will be even higher. In order to break into this turnover, it is necessary to have a strong research potential, research centres and laboratories. Currently, several sectors in the Baltics are having such a potential. However, it may also be observed that scientific re-

search is getting more specialised. In production a range of products complying with international standards can compete in foreign markets owing to lower labour costs in comparison with labour costs in advanced countries. However, such a situation may not last for a long time. By integrating in Europe, qualified labour will move to the geographical regions (areas) with higher remuneration, but the remaining less skilled labour will be unable to continue to manufacture such products. As for manufacturing of traditional industrial and agricultural products, economically developed countries have sufficient quantities of such products, and the demand of the less developed countries can be satisfied by agriculturally and industrially developed countries having a comparatively bigger handicap in comparison with the Baltic States. Second. In the new conditions employment of population becomes a serious problem: the post-industrial development phase requires educated, qualified labour, with knowledge becoming more decisive than physical strength or ability.

It has to be noted that these days employers do not anymore require skills, considering that they are too closely associated with practical skills, but instead require competence combining social behaviour skills, initiative and the ability to undertake risk, which an individual has mastered as specific relevant technical skills – in the real sense of this word - via learning and practical training. If this new requirement is complemented with personal motivation, which is considered to be a factor stimulating change, it becomes clear that specific subjective qualities, irrespective of whether they are inherited or developed, and which are often referred to by the employers as "life skills", combine with knowledge and skills to form the required competence. Professional re-qualification events are in most cases inefficient, since different short-term courses can give a positive effect only provided there is sufficient fundamental knowledge. For most of the population of the Baltic States this may turn out to be a very painful problem. Under free market conditions labour force will have to be able to adapt to the requirements of the market. The population that will be able to do it, will gain (at least will not lose), those who will not be able to do it – will turn out to be losers.

In Latvia this problem has become especially topical in the last ten – fifteen years. So far, it has been mostly associated with the changes in internal conditions. With the transfer to the market economy many employees, which for a long time have performed monotonous, narrowly specialised functions in operations requiring physical or mental activity, could not adapt to the new conditions and did not find application for their abilities.

In a longer perspective this issue is related with global processes. Of course, also in the new conditions there will be the demand for semi-skilled (low-paid) labour alongside with highly qualified (well-paid) labour. The issue of what jobs Baltic inhabitants will be able to perform in the future is to be addressed already today. Therefore, the long-term perspectives of both production and employment of population are related with knowledge. Education and science are the necessary prerequisites for successful integration into globalisation processes.

Therefore education and science are major directions of application of material and intellectual resources to ensure economic, social and cultural development of the particular country.

The world experience explicitly proves that science and higher-level university education ensuring both versatility and in-depth studies of processes is the basis for the development of high technologies and culture.

The education reform was undertaken after restoration of independence in Latvia. However, despite a number of positive changes, the reforms so far have not produced the expected positive effect. The quality of the reforms was affected by several objective and subjective factors: insufficient financing, the desire to, at any price, to approach western standards, departmental interests, a desire to acquire political capital etc. Therefore the reforms were frequently undertaken for the sake of the reforms themselves, without serious substantiation and systemic approach. Changes were introduced in separate elements of the system, without coordinating them with other elements.

Thus in many cases reforms were only imitation – names, external attributes and their forms were changed, without addressing the content and quality of the results of education.

Educational process is made possible through the functioning of the education system incorporating several elements (stages) – pre-school education, primary, secondary and tertiary education. Changes (reforms) in one of these stages trigger changes in the consecutive ones. These consequences may be either positive or negative. They may improve or aggravate the overall situation. In any case they call for changes in the higher consecutive stage.

Secondary education is the platform for tertiary education. The reform launched in the early 90s, the transfer to the elective subjects principle has seriously undermined secondary education in Latvia. In most cases in secondary schools preference was not given to exact science and natural science subjects. After a few years of unsuccessful implementation of the reform education policy makers tried to rec-

tify the situation, namely, they developed the so-called programme education concept, which created humanities and exact sciences focussed schools and programmes. This was further followed by the principle of selection of a programme. Thus the possibility of choosing the centralised examination in fact anyway lead to a possibility of selecting many subjects. Enrolment in higher educational establishments, taking into account the results of the centralised examination, serves to even strengthen this principle.

Why has the introduction of this principle done such a harm? The possibility of choosing electives in itself is very good. It cannot be denied that every person has abilities and interests which are either inborn or developed by different external environments in the first years of individual's life. The advocates of the programme conception deem that these abilities should be further developed at the secondary education level and that it is not necessary to study all subjects within the framework of one programme.

Let us consider the factors that determine whether implementation of this conception may create more negative than positive results. First of all, it is necessary to consider that the basic choice is to be made after completion of primary education, i.e., at the age of 15 – 16. At this age most teenagers are not yet fully aware of their abilities and interests. Therefore the selection is most frequently determined by a number of additional factors: parents' recommendations, fashion, advertisements, friends' behaviour, desire to study in a prestigious school etc. Thus, the basic positive idea of this conception in fact has not materialized, but the negative effect is that after finishing secondary school, at the age of 18-19, when the youngster is already starting to become aware of his/her abilities and interests, it is difficult to change the profile of education.

Next. Currently, Latvia is facing a dramatic shortage of specialists in exact sciences for national economy. At the same time, Riga Technical University occasionally experiences difficulties to complete groups in several specialities even for budget-financed places. Recently, different state institutions, when encountering this situation, try to rectify it, very frequently by resorting to ineffective means: they threaten university graduates specialised in social sciences with unemployment, reduce budget-financed places for specialities in social sciences etc. The fight is going on against consequences instead of the causes.

It is not a secret that a big part of schoolchildren tend to choose the easiest way. If there is a possibility of choice, then they select subjects that are easier. Physics, chemistry and mathematics usu-

ally are not included in this category. Therefore, this year the centralised mathematics examination was taken only by 25% of schoolchildren. Insufficient preparation in mathematics creates serious obstacles not only for mastering engineering sciences, but also in such social sciences as economics, management science etc., which a broader public does not classify as such that require knowledge of mathematics. For example, without good knowledge of mathematics it is practically impossible to normally acquire such fundamental economic subjects as microeconomics, macroeconomics, finance etc. Therefore academic staff of tertiary educational establishments are forced to lower the theoretical level of subjects and also academic requirements. There are frequent cases when these secondary school graduates find it difficult to resolve an equation with one unknown quantity, not even speaking about composition of such an equation.

In such conditions it is difficult to speak about enhancing of the quality of tertiary education. Nowadays there is a debate in Latvia about the number of centralised examinations and the introduction of an obligatory examination in mathematics for all. It is envisaged that in several subjects (geography, art history, business basics) examinations will not be centralised, and that these examination papers will be checked by the respective schools. The intended reorganisation implies technical benefits (the issue of documents will be speeded up by one week) but this has nothing to do with the improvement of quality of education. As for introduction of a compulsory centralised examination in mathematics, then it is in fact aimed at improvement of the level of preparedness in mathematics. The authors of this proposal substantiate it with the requirement to overcome the said disproportion between the number of specialists in exact sciences and humanities. The opponents indicate that this measure will practically liquidate the so-called programme principle. Many argue whether knowledge of mathematics should be a must for all. In fact the discussion is being reduced to the application or non-application of mathematics in this or that sphere. We deem that there is one more relevant factor neglected in these debates, which may be even more essential than all the above mentioned.

The issue is about the process of acquisition in mathematics, which forms a certain mode of thinking and perception of the world. Conditionally, we may differentiate between two modes of thinking and perception: the emotional, which is associated with literature, art etc., and the mathematical. Each individual possesses these types in different proportions; at the same they both are coexistent and form one single whole.

In secondary school the objective of such subjects as literature and mathematics is not only or not so much to provide knowledge about literature or teach a definite number of mathematical formulae, but these are tools for forming a definite method of perceiving the world and developing a respective type of thinking.

Literary images help to cognise the spiritual realm, moral values; they teach us how to differentiate the good from the evil, thus developing a definite system of values and the world outlook.

In the course of acquisition of mathematics, the mode of thinking is strengthened based on mastery of accurate causal regularities. Mathematical causal regularities are expressed in an absolutely abstract form, which allows applying mathematical methods in practically all spheres of knowledge.

These two types of thinking, complementing each other, are in a constant interaction and as such they contribute to the development of a versatile, harmonious personality.

Finally, one more downside of the so-called programme education. It is a generally acknowledged fact that nowadays information technologies, communications are rapidly changing, which reflects in the changes of the requirements with regard to knowledge and skills posed to employees. Very frequently the skills acquired in the young age become obsolete within one generation and are not applicable any more. In the future this will express itself even more markedly. Therefore different re-qualification forms are required. To ensure a sufficient range of retraining possibilities, a person undergoing requalification should have an appropriate range of basic knowledge. Early (at the age of 15-16) specialisation (secondary programme education) considerably reduces the scope of possibilities in the consecutive life periods and consequently reduces mobility of individuals in the labour market.

The discussion about the introduction of an obligatory centralised examination in mathematics necessitates highlighting one more aspect. Several secondary school principals, when speaking about the possibilities to ensure the required teaching level at their schools, express concerns about the ability of the school to ensure the required level of teaching in mathematics due to a dramatic shortage of teachers of mathematics and physics, this is especially topical with regard to physics. The shortage of teachers in these subjects is connected with the attitude towards these subjects. Physics has become an elective, and mathematics, for most of the schoolchildren, is a secondary subject. Now, in order to improve the situation, it is not sufficient to simply (administratively) change the status of the subject. Additional mea-

asures, financing and effort will be required to ensure instruction of these subjects by appropriately qualified teachers.

After restoration of independence, the Latvian tertiary education system, in order to integrate in the common European area as provided for by the Bologna declaration, had to effect a number of structural changes, such as:

- introduction of the two-cycle (bachelor and master) degree system,
- mutual recognition of diplomas and study periods,
- establishment of quality assurance systems.

It has to be noted that several years have passed since it was ordered to effect compulsory reorganisation of efficiently functioning programmes (the professional 5-year programmes had to be split

into the bachelor level studies and 1.5 – 2.5 year long academic/professional master studies) to comply with the common European requirements; the consequences of this reorganisation are still being felt. The content and the requirements of the bachelor and the master programmes are still not very well considered, there is no uniform approach among educational establishments, which creates problems to ensure appropriate quality of education.

In the Republic of Latvia, the situation with tertiary education in quantitative terms is satisfactory. Table 1 presents the data about the number of students per 1000 of the population, which is constantly growing and in 2004 reached 57 students per 1000 of the population of Latvia, which is the highest indicator in both Europe and the world. This is also supported by the data presented in Table 2.

Table 1. Number of students in tertiary education establishments (per 1000 of the population), [3]

	Latvia	Lithuania	Estonia	Germany	Check Republic	Ukraine	Russia
1996	23	23	30	26	20	31	19
2000	43	37	40	25	25	39	38
2002	51	48	47	23	21.3	47	42
2003	55	53	49	24	26	51	45
2004	57	57		24		54	48

The data in the table show a rather optimistic picture to Latvian education policy makers, as, since the 90s, the number of students has been constantly growing. However, this growth is due to the fact that part of students have undertaken studies repeatedly to acquire a second diploma, but many students have resumed studies or without a substantial reason have prolonged the duration of their studies. At the same time, the number of secondary school graduates undertaking studies in higher educational insti-

tutions has already for many years remained unchanged. A reason for concern is also the fact that in 1-2 years, due to the demographic situation, the number of secondary school graduates will gradually decline; reaching its lowest point after 10-12 years.

The number of tertiary education graduates aged from 20-29 per 1000 of the population is also growing and is higher than the average indicator for the European Union.

Table 2. Tertiary education graduates (per 1000 of the population aged 20 – 29), [4]

Time geo	2000	2001	2002	2003
European Union (25 countries)	43.2	47.0	49.0	52.9
Latvia	46.7	62.6	58.5	63.9
Lithuania	51.8	57.7	63.0	73.0
Estonia	37.2	40.1	40.9	51.7
Denmark	54.0	55.2	61.6	63.3
Czech Republic	22.4	25.4	25.7	28.1
Hungary	37.5	36.2	38.9	42.5
Poland	59.1	73.1	76.4	77.8
Bulgaria	38.1	41.4	44.1	41.2
United Kingdom	65.0	71.4	72.7	81.4
United States	56.2	56.5	57.6	59.7

When analysing the number of graduates of tertiary education establishments worldwide, we see a positive trend – it is growing from year to year.

Latvia ranks fourth in the world in terms of the number of graduates. The situation in Latvia would be better, if a big number of full-time students did not

have to combine their studies with full-time work, as a result of which the quality of result of education deteriorates. Instead of improving the situation, several more problems have been created also due to the changes in the procedure of granting monthly scholarships (students may qualify for a scholarship only if they are not gainfully employed). Which means that despite the fact that the size of the scholarship has increased from 8 Ls to 70 Ls, the number of full-time students qualifying for a scholarship has reduced from 100% to 10 - 15%. This situation has created tough competition for scholarships, as well as has created a situation when most talented and capable working students may not qualify for the scholarship. The situation is especially typical in master studies. The economic situation in the country forces full-time students to combine their studies with full-time jobs, which is also due to the imperfect system of granting scholarships and study loans.

When analysing the quality of education, it is necessary to analyse the factors essentially affecting it. One of the decisive factors in all the stages of the educational system is academic staff. The public poses very high requirements to teachers and academic staff both in terms of qualifications as well as general intellectual development. There are several preconditions for attracting persons with appropriate abilities and potential of development. First, young people with appropriate abilities should be morally and materially motivated to work in the field of education. If there are certain moral stimuli (creative work, awareness of doing socially relevant work), then material incentives are definitely lacking.

Secondly, those working in the educational system should have a possibility to constantly maintain and upgrade their qualifications. Two mutually inter-related factors are required for academic staff (teachers) to be able to maintain and upgrade their qualifications – financing and time. The fact that remuneration of educational staff does not correspond to the level required is a generally acknowledged fact. The low remuneration of academic staff (teachers) in its turn creates a number of negative effects. In order to earn means of subsistence, academic staff (teachers) have to work 1.5 – 2 teaching loads. Many of the academic staff work in several higher educational establishments. Therefore, they physically do not have time or ability to engage not only in personality development activities, but even to undertake elementary upgrading to deliver the subjects taught. In such conditions it is difficult to speak about preparation of teaching aids and textbooks. Many academic staff quit educational work for jobs in other branches; most frequently these persons are the most capable and qualified staff. Talented young people do not choose a teacher's or researcher's career. At the

same time, 81% of students undertaking studies of education science and pedagogy do that for a tuition fee, which also is a ground for concern. Most of doctoral students want to obtain the doctoral degree to make successful careers in business, government institutions etc., instead of choosing careers in tertiary education establishments and research institutions. Similar processes can also be observed at schools. We consider that this trend is most unfavourable, since it may have irreversible implications.

Table 3 reflects the trends in the structure of academic staff in tertiary education establishments of the Republic of Latvia in academic years 2004/2005 and 2005/2006.

We can see the discrepancy between the number of academic staff and students. In Latvia, there are 28 students per each unit of academic staff. In the European Union the respective indicator is 16 [5]. In some higher schools this indicator is very big. In the Higher School of Information Systems – 72; Riga International School of Economics and Business Administration – 68.8; Business Higher School "Turoba" – 56.9; Banking Institution of Higher Education – 47.8 etc. In many tertiary educational establishments the share of academic staff with scientific degrees is very small. In recent years it has reduced from 50% four years ago to 46% in 2005/2006 [5].

In two universities the share of academic staff with scientific degrees is lower than 50%, which does not correspond to the status of a university specified by the LR Law on Higher Education. The number of staff in Latvian tertiary educational establishments aged younger than 30 is reducing (11%), and the number of academic staff of state tertiary education establishments aged older than 60 is increasing. In 2005/2006, 27% of academic staff of state tertiary education establishments are older than 60. Four years ago this indicator was 21%. It has to be noted that renewal of academic staff is one of the urgent issues to be addressed by tertiary education establishments in the near future to ensure qualitative succession of academic staff. This will be impossible to do with an inadequate number of doctoral students ready to connect their future careers with the area of education. However, this problem is impossible to resolve in a short time, since the situation with the doctoral students in Latvia is critical, i.e. their number is negligibly small – in 2004, doctoral degree was awarded by tertiary education establishments only to 112 persons. This is only 0.4% of the total number of persons conferred a degree or qualification, which is an indicator greatly lagging behind the respective indicators of other countries.

Badly considered reforms in the system of edu-

Table 3. Academic staff of LR tertiary education establishments [5]

Tertiary education establishment	Number of students per unit of academic staff		Academic staff with a scientific degree, %		Professors %		Academic staff younger than 30, %		Academic staff older than 60, %	
	2004/2005	2005/2006	04/05	05/06	04/05	05/06	04/05	05/06	04/05	05/06
<i>Universities</i>										
University of Latvia	31,5	26,6	55	56	15	17	11	10	22	22
Riga Technical University	22,9	20,8	60	59	15	15	7	7	41	42
Latvian University of Agriculture	20,2	18,1	35	36	11	11	20	20	29	30
Daugavpils Pedagogical University	26,1	22,3	46	42	8	6	12	9	12	12
Riga Stradiņš University	11,5	13,3	50	58	8	15	7	6	25	30
<i>State tertiary education establishments</i>										
Liepāja Pedagogical Academy	34,3	27,6	36	37	5	5	10	8	26	26
Latvia Maritime Academy	19,5	13,8	39	49	10	8	4	2	49	49
Riga Pedagogical and Education Management Higher School	26,1	22,4	31	33	4	9	6	7	19	20
Rezekne Higher School	27,9	26	16	22	4	8	19	17	15	17
Ventspils Higher School	27,8	27,7	37	50	3	2	9	17	9	12
Vidzeme Higher School	27,7	27,9	11	12	0	0	9	18	2	2
Banking Institution of Higher Education	56,6	47,8	22	21	5	5	0	0	10	12
<i>Tertiary education establishments established by legal entities</i>										
Riga International School of Economics and Business Administration	96,7	68,8	28	71	4	4	15	9	11	14
Business School "Turība"	68	56,9	14	18	0	1	18	15	8	11
Baltic Russian Institute	65	34,3	69	60	7	9	9	19	20	19
Higher School of Information Systems	64,3	72,3	57	88	8	14	16	6	8	8
Higher School of Social Technologies	24,5	15	77	78	2	1	8	13	10	29
Higher School of Economics and Culture	29,5	24,7	74	21	0	0	17	10	20	19

cation indicate to relevant errors that affect the level of students education specifically and the quality of education provided on the whole. The problems highlighted with regard to tertiary education are relevant, since they disclose the problem areas of current situation. The analysis of these problems allows finding optimum solutions and promoting both the development of the system of education as well as the growth of national economy.

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