

UDC 37.013-048.35

**THE MODERNIZATION OF GENERAL SECONDARY  
EDUCATION AND VOCATIONAL TRAINING IN UKRAINE:  
CIVILIZATIONAL AND NATIONAL CONTEXTS**

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**МОДЕРНІЗАЦІЯ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ  
ТА ПРОФЕСІЙНОЇ ОСВІТИ В УКРАЇНІ:  
ЦИВІЛІЗАЦІЙНИЙ І НАЦІОНАЛЬНИЙ КОНТЕКСТ**

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The modernization of general secondary and vocational training in Ukraine: civilizational and national contexts. The article states that there are problems associated with the axiological imperatives of the state educational policy. This is considered by the representatives of different scientific branches such as futurologists, philosophers, educators, sociologists, and economists within civilizational and formation dimensions due to its complexity and systematic nature. It is revealed that market values, namely, profit and demand of solvent consumers are a society's axiological orientations at the stage of its democratic consumer formation (which our country is experiencing nowadays). Under these circumstances, education is regarded as an ordinary market product. Its non-profitability leads to its low stage in the hierarchy of social values. However, in accordance with the demand of the state as a public consumer, the general secondary education institutions are limited to the minimum academic training of students, focusing on their socialization and professionalization. It is stated that the market requirement for minimizing the cost of education is detrimental to its quality. Therefore, in the second half of the 20th Century, the general public was alerted to a problem already obvious to specialists, functional illiteracy of highly developed countries. Within the article the selective educational model is described. Some Western scholars regard it as a tool not only for professional but also for social selection of young people. This model is based on the genetic paradigm of abilities. A significant number of general secondary education institutions in highly developed countries worked in accordance with the model in the 20th Century. The article actualizes the importance of civilizational trends in the educational development for the modernization of education in Ukraine. These trends include the principles of STEM-education. This involves the fundamentalization of the educational field, the formation of the students' natural-mathematical general knowledge and information-digital competence, as well as the ability to carry out researches and solve engineering problems.

*Keywords:* civilizational trends, democratic consumer society, democratic values, education, market values, STEM-education.

У статті зазначено, що проблему аксіологічних імперативів державної освітньої політики у зв'язку з її комплексністю й системним характером розглядають представники різних галузей наукового знання – футурологи, філософи, педагоги, соціологи, економісти – у цивілізаційному та національному вимірах. Виявлено, що на етапі становлення демократично-споживчого суспільства (який сьогодні переживає наша країна) його аксіологічними орієнтирами є ринкові цінності – прибуток і попит платоспроможних споживачів. У цих умовах освіта розглядається як звичайний ринковий товар і через свою неприбутковість посідає в ієрархії суспільних цінностей досить низький щабель. При цьому відповідно до попиту держави як суспільного споживача заклади загальної середньої освіти обмежуються мінімальною академічною підготовкою учнів, основну увагу приділяючи їх соціалізації та професіоналізації. Визначено, що ринкова вимога мінімізації витрат на освіту негативно вплинула на її якість. Тож у другій половині ХХ ст. широка громадськість дізналася про феномен, з яким вже були обізані спеціалісти, а саме, функціональну неграмотність населення високорозвинених країн. Охарактеризовано відбірково-поточну освітню модель, яку деякі західні вчені розглядають як інструмент не тільки професійної, а й соціальної селекції молоді. За цією моделлю, що ґрунтується на генетичній парадигмі здібностей, працювала в ХХ ст. значна кількість закладів загальної середньої освіти у високорозвинених країнах. У статті актуалізовано значущість врахування цивілізаційних тенденцій розвитку освіти для модернізації освіти України, до яких належить осучаснення освітньої галузі на засадах STEM-освіти, що передбачає її фундаменталізацію, формування в учнів і студентів узагальнювальних наскрізних знань природничо-математичного спрямування та інформаційно-цифрової компетентності, а також спроможності здійснювати наукові дослідження та розв'язувати інженерні завдання.

*Ключові слова:* освіта, демократично-споживче суспільство, ринкові цінності, демократичні цінності, цивілізаційні тенденції, STEM-освіта.

Ukraine's educational present characteristic feature is the systematic modernization of primary education and the search for ways to develop preschool education. In this regard, it is more than ever essential to consider the civilizational trends of the educational development in today's globalized and technological world. It is also important to take into account the experience of national education systems development in highly advanced countries at different stages of their functioning. This will prevent the mistakes in determining state policy axiological imperatives in the field of education in general and its individual links in particular. The price of these mistakes is the accumulation of factors that can aggravate Ukraine's social and economic development gap with highly advanced countries.

The axiological imperatives definition problem is considered by the representatives of different scientific branches such as futurologists, philosophers, educators, sociologists, and economists within civilizational and formational dimensions due to its complexity and systematic nature.

*Futurological* aspects are related to defining the educational role in the mankind future as one of the systematic factors of people's life quality improvement and modern civilization global problems solutions. These aspects are covered by such scientists as A. Dlihach (Длігач, 2018), A. Halchynskyi (Гальчинський, 1999), M. Holianych (Голянич, 2017), Z. Brzezinski (1982), M. Kaku (2018), R. Kurzweil (2005) and others. They emphasize the necessity to modernize national education systems in accordance with the challenges of the Third Industrial Revolution. This is evident in the emergence of social and economic realities of the VI technological patten within developed countries. The systematic component of this pattern is NBIC technologies (N – nano-, B – bio-, I – information-, C – cognitive-).

The need to modernize national education systems within the post-classical education paradigm is emphasized in the works of the variety of education *methodologists* (V. Andrushchenko (Андрущенко і Лутай, 2004), V. Bekh (Бех, 2012), V. Kizima (Кізіма, 2007), V. Kremen (Кремень, 2014), V. Lutai (Лутай, 2005), G. Han (2016), R. Usher and R. Edwards (2010) and others. They represent the modern philosophical discourse of scientific knowledge in the teaching field.

The said futurologists and philosophers' scientific achievements comprise *the civilizational content* of the modern state policy priorities in the educational field. They are recognized by a number of highly developed countries (China, South Korea, Singapore, USA, etc.) as conceptual foundations for the educational modernization. Therefore, these countries have been actively resolving the issues of the STEM-education implementation in the educational institutions of different degrees, types and ownership forms. This has been done at the legislative, institutional and organizational levels since the first decade of the 21st Century (I. Lyublynskaya (Люблинская, 2013), A. Carnevale, M. Melton and N. Smith (2014), J. Pitt (2009), and others).

*The formational content* of the state policy axiological imperatives substantiation in the educational field involves consideration of economic, political, social and cultural, religious and other factors. They are inherent in a particular stage of any state functioning, as they explicitly determine all the processes that take place in education (A. Antokhov (Антохов, 2009), I. Kaleniuk (Каленюк, 2001), O. Korchynska (Корчинська, 2019), O. Padalka (Падалка і Каленюк, 2012), R. Patora (Патора, 2002) and others).

*The purpose* of our article is to describe the methods and predict the results of Ukraine's educational system modernization within its development priorities determination in terms of the formational approach only.

The socio-economic and political processes that are taking place in our country nowadays inherently represent the axiological revolution. These processes can be characterized as a democratic consumer society development. At the time, they also affected some highly developed states. The ideas of freedom, democracy and private enterprise became the basis of their way of life and the main source of social contradictions. Namely, economy must provide maximum profit (market values); culture must create conditions for individual self-realization (democratic values), and politics must serve the principle of equality (democratic values). It is clear that the dichotomous nature of market and democratic values has led to negative consequences not only in the democratic consumer society, but also in the educational system, leading to the crisis situations emergence.

Market values are determined by the market functioning principles. Within the marketing theory «market» is defined by such concepts as «demand» that is the buyer's solvent need for a product (service) of a certain type and quality, «supply» as the volume and range of goods and services offered for sale, «equilibrium» that is the state of the market economy, when demand equals supply and so on. Analyzing the correlation between these characteristics allowed the experts to formulate the market functioning basic principles. These include profit orientation, demand targeting (targeting the needs of solvent consumers), and the system-forming nature of the price formation strategy. Therefore, the profit and the consumer are among the most important market values (Антохов, 2009).

Democratic values embrace so-called traditional and novel values. Scientists refer human rights to the first group, and education and information as well as such civilizational values as community, tolerance, humanism to the second one.

Market and democratic values, interacting and competing with each other, determine the strategic directions of democratic consumer society development, including the education system.

In order to better understand the trends and predict the results of the Ukrainian educational system development in the second decade of the 21st Century, we need to determine the patterns of educational systems development

in highly advanced countries during their democratic consumer society formation period.

Summarizing the results of the research on the values system evolution in highly developed consumer societies allows us to distinguish three stages in their axiological priorities transformation process:

- Stage 1 – market values priority at the stage of democratic consumer society formation and development (second half of the 19th Century - first half of the 20th Century);
- Stage 2 – education, information and civilizational values recognition as axiological priorities for the high-tech countries development at the stage of the information society development (second half of the 20th Century);
- Stage 3 – post-non-classical education values at the stage of the VI technological pattern development (the first half of the 21st Century).

Thus, profit and solvent consumers demand are a society's axiological orientations at the stage of its democratic consumer formation (*which our country is experiencing nowadays*). Therefore, the educational system as a whole, and its individual units, in particular primary and preschool education, develop during this period in accordance with the market laws. These laws include *the law of economic freedom* which implies freedom of entrepreneurship, freedom of price formation and freedom to choose sellers and buyers; *the demand targeting law* which is aimed at meeting the needs of those consumers who are able and willing to buy; and *the efficient price formation law* that focuses on consumers' financial capabilities.

In accordance with *the law of economic freedom*, the education management decentralization is observed in the most countries with developing democratic consumer society. Educational institutions financing, licensing and establishment issues are solved at the level of the states (the USA), lands (Germany), counties (the UK), etc. The educational institutions themselves are also empowered to develop their own curricula. In this respect, government intervention in education is considered justified only when the education state threatens the national sovereignty and the country's security or turns out to be unfavorable for the normal market economy development.

Important steps towards the law of economic freedom implementation are:

- voucher financing system for a particular student. It provides parents with the opportunity to freely choose an educational institution, and also

promotes competition between kindergartens, schools and higher education institutions;

- widespread publicity of students' testing results in order to rank educational institutions similarly to other market entities;
- commercialization of various school life aspects, as well as educational institutions marketing activities aimed at attracting additional contingents of students.

According to *the demand targeting law*, the educational activities reverse principle is the basic principle of educational institutions functioning in democratic consumer societies. It involves the organization of education according to the consumers demand: on the one hand, the community (states in the USA, lands in Germany, counties in the UK, etc.) or the state as a public consumer which is interested in citizens' education level. It allows a democratic consumer society to operate successfully. And, on the other hand, individual solvent educational services consumers who are interested in access to an attractive career (Падалка і Каленюк, 2012).

At the same time, *the state, as a public consumer*, requires education to fulfill two basic functions: the educational itself and the social selection function.

The intensive development of science and technology in the 20th Century led to the need for a significant increase in the education level among the developed countries population. It resulted in the creation of a new social institution, free compulsory secondary school: ten years in the UK, France and the United States and nine years in Germany.

At the same time, the market requirement for minimizing the cost of education is detrimental to its quality. Therefore, a curricula characteristic feature in public institutions during the period of a democratic consumer society formation is their unpretentiousness. For example, in the UK before the adoption of the Education Reform Act (1988), English and Literature, Mathematics, Religion and Physical Education were compulsory subjects in secondary education. All other courses were elective.

As a consequence, in the second half of the 20th Century, the general public was alerted to a problem already apparent to specialists, *functional illiteracy*. Statistics show that approximately 10% of adults in developed countries are functionally illiterate, including 15 million adults in the US (NAAL, 2003).

The vocational students training, unlike the academic one, occupies a significant place in the curricula of general secondary education institutions in democratic consumer countries. Thus, more than 70% of Gymnasiums and Realschules in Germany and approximately 60% of schools in the UK provide thorough pre-vocational training (within such programs as the Professional, Industrial Project, Short Industry Studies Course, etc.). In US high schools, over 25% of students specialize in a variety of industries: construction, car repair, metalwork, computer assembly.

*Social selection function realization*, namely, the distribution of youth by social and professional strata, is due to the educational diversification. The most effective ways include the elective courses introduction and the organization of trainings in accordance with the selective educational and staging models.

In highly developed countries the elective courses introduction is considered to be a real means of individualizing learning. It is regarded as one of the most important achievements of Western pedagogy. It allows students to realize their abilities, to understand their aptitudes and interests and ultimately to decide on their future profession.

Consequently, until the 80's of the 20th Century more than 35% of school hours were allocated to the elective courses in American, French and German general education institutions, and up to 50% in the UK ones. At the same time, the students were offered a large number of various courses, both academic and purely utilitarian.

When introducing elective courses into Ukrainian general secondary education institutions, it should be borne in mind that some Western scholars regard them as an instrument not only for professional but also for *social selection of young people*.

Another tool for students' social selection is the selective educational model. It is based on the genetic paradigm of abilities. It can be characterized by the following provisions: abilities that are of a general nature (in other words, the student can achieve the same results in various fields), they are innate and can be well defined in 11-12 years old children. Therefore, the most characteristic features of the selection model are:

1. Distribution of students to schools/sets with the help of a post-primary school testing.
2. Fixing standards and requirements for learning outcomes. If a student does not meet these standards, he or she may undergo another

training course. If he/she does not master the school curricula, he/she will be transferred to the bottom set/to another school.

3. Practical inability to go to a top set/more elite school.

4. Minimal learning individualization.

5. Centralization of the best, most qualified teachers in schools/sets with the highest intellectual potential (Калувэ, Маркс & Петри, 1993).

The selective educational model can be implemented both within one integrative school and within a system of different general secondary education institutions. For instance, in the UK, secondary schools are traditionally represented by different types of institutions, which contingent is formed on the basis of selection among primary school graduates. The prestigious general secondary education institutions are grammar schools. Their graduates have the opportunity to study at the best universities in the country. About 17% of primary school graduates attend such schools. The most common type of general secondary education institutions in the UK up to the 1960s was a modern school that was essentially practice oriented. It was basic for vocational professions. However, in the 1960s, the situation of modern schools changed significantly because of the emergence of integrated schools, where most primary school graduates enrolled.

Integrated schools combine several sets that differ in terms of learning period, curriculum, and opportunities for further higher education.

The rules of sets formation are tightly defined: the sets distribution of primary school graduates is based on the results of testing and interviews. The transition of students from a bottom set to a top one is almost impossible (Калувэ, Маркс & Петри, 1993).

In Germany, learning begins at the age of six in a common primary school and then continues in one of three types of general education institutions: Hauptschule, Realschule and Gymnasium.

Nine-year school education is compulsory, general, and free. The most important educational system issues in Germany are regulated by the state only. The federal states have the greatest powers in the organization of education. This leads to educational differences in 16 federal states.

In most federal states, children do not receive grades in their first two years of primary school. The teacher provides the parents with only a general description of the child's progress in the particular subjects study.

About a quarter of students are enrolled in Hauptschule (term of study – 3-4 years). Its graduates either enter the labor market or receive vocational



training during 2-3 years in the enterprise apprenticeship system (4 days a week) with simultaneous attendance of vocational schools (1 day a week).

The Realschule (term of study – 6 years) gives the certificate of professional-practical orientation. Its graduates continue their studies in secondary vocational schools and then, if desired, may study at higher education institutions.

Gymnasium (term of study – 9 years) provides full secondary education and the right to enter higher education institutions of university type.

In the late 70's – early 80's of the 20th Century integrative schools began operating in Germany. However, unlike in other European countries, the network of these general secondary education institutions was expanding very slowly. Today, only 5% of all students attend such schools (Anweiler, Fuchs, Dorner und Petermann, 1992).

The staging model, based on the assumption that students' cognitive abilities for different subjects may vary, is more democratic than the selective model. Therefore, the educational process within this model is organized as follows: students have a certain number of hours per week in the permanent mixed-ability group (the group remains constant throughout the study) and a certain number of hours in the equal-ability group (this group's members may change throughout the year).

In mixed-ability groups students learn a certain set of subjects – social sciences, mother tongue, some exact sciences, physical education, etc. In the equal-ability groups, where Mathematics and Foreign Languages are taught, students are grouped according to their test results. As a rule, there are three levels of a subject learning. Depending on the progress and the parents and students' desires, a rotation is possible. It is carried out twice a year after the student has worked out the Catch It Up program (Калувэ, Маркс & Петри, 1993).

The staging model of the educational process has become widespread in the world. In our opinion, this model of teaching is an undoubted property of Western pedagogy. Within cities where there are three or four classes in one year in all general secondary education institutions, it is quite easy to create an educational process according to the staging model.

The educational systems functioning picture in democratic consumer societies would be incomplete without an analysis of their private sector. As it is a means of meeting *the demand of individual solvent educational services consumers for access to high quality education*.

The number of private secondary schools students (relative to the total number of students) in Great Britain, Germany, France and the USA at the end of the 20th Century were respectively 6%, 10% and 15%, 16.1%. At the same time, 12.8% of the total number of preschool and primary school children was educated in private kindergartens and elementary schools in the USA, 18.1% of students in secondary private schools, and 23% of the total number of students in private colleges (Джуринский, 1999).

Significant differences in the distribution of the private sector in the highly developed countries education are explained by the state policy in the private education field. For example, if in the US and France, private and public general secondary education institutions receive equivalent funding from the state, then in the UK, the private sector «survives» on its own without receiving any financial support from the state.

Private education sector rights restriction contradicts one of the major market laws in the field of education, the law of mixed funding. This law emphasizes the need to fund general secondary education institutions from various sources: the budget, consumers' educational services payments, sponsorship and parental contributions, etc. There are two groups of educational services consumers that determine the force of law: the state (communities) and individual solvent citizens. Economists see the key problem of the «underdevelopment» of the private education sector in the UK in neglecting the law of mixed funding (Щетинин, 1996).

Neglecting market laws within the general secondary education system modernization is observed today among the Ukrainian authorities. Thus, Law of Ukraine «On complete general secondary education», approved by the Verkhovna Rada, categorically prohibits the parental funds involvement into the implementation of all or part of any educational programs. However, it should be noted that the same Law provides the funding of private general secondary education institutions both by the state and parents. As we can see, the Verkhovna Rada «gives the green light» to the segregation processes in the Ukrainian education, violating the rights of parents who are unable to provide their children with education in private general secondary education institutions. Although, the vast majority of the country's population belongs to the said category.

Considering what has been said above, we have drawn the **conclusion** that Western European and the United States education systems at the stage of formation and development of a democratic consumer society developed as a

purely market phenomenon. Under these circumstances, exclusively market values were considered to be the most important, and education was regarded as an ordinary market product. Education non-profitability led to its low stage in the hierarchy of social values. However, in accordance with the demand of the state as a public consumer, the general secondary education institutions were limited to the minimum academic training of students, focusing on their socialization and professionalization.

The modernization of the general secondary education system in Ukraine is undergoing the same scenario nowadays. And this provokes concerns. As introducing NBIC-technology into the all life spheres, highly developed countries have set a course on modernization of the educational branch on the basis of STEM-education. This involves the fundamentalization of the educational field, the formation of the students' natural-mathematical general knowledge and information-digital competence, as well as the ability to carry out researches and solve engineering problems.

***Directions of further research.*** This article is the first of a series of articles «Education of Ukraine in the Modern Civilizational Dimension». We plan to submit the results of scientific research on the development of education systems in highly developed countries after the «satellite situation» (launch of the artificial satellite of the Earth by the Soviet Union, 1957), as well as in the terms of the Third Industrial Revolution connected with the introduction of VI technological pattern.

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