

# Investment in the education system and quality specialist training

Vladimir Puzikov,  
Omsk Academy of Humanities,  
Omsk State Pedagogical University,  
Omsk, Russia  
[puzikov@omgpu.ru](mailto:puzikov@omgpu.ru)

**Abstract**— The article is not actually about direct financial investments, but about the potential of the educational system capable of creating a range of opportunities and conditions for the comprehensive and harmonious development of actors in the educational process. The investment potential of education is the recruitment of all the means and resources available in the arsenal of the education system, including the conditions that provide the most favorable treatment in order to obtain the expected beneficial effect. The investment potential of education is understood as the maximum possible social, pedagogical and economic return. The difference between the invested material and intellectual costs and the actually obtained social and pedagogical results in the form of the quality of specialist training is an indicator of the effectiveness of using the potential of education. At the same time, education is considered as a sphere of social reproduction, a system of production and multiplication of the potential of an individual and a specialist - knowledge, mental and creative abilities, general cultural and professional competences, intended to increase the vital forces of a person and society.

**Keywords**— investment in the education system, the quality of specialist training.

## I. INTRODUCTION

As you know, education is a system of production and a multiple increase in mental and creative abilities, knowledge, skills and abilities of students used to build up the productive forces of society. This is precisely the reason why the author of the article introduces the concept of "investment in the education system", used by analogy with "investment in the economy". The integrated volume of budgetary and extrabudgetary financial resources invested in the reproduction and development of the educational system largely estimates the qualitative and quantitative parameters of the training of specialists at all levels. However, in this matter, not only financial, but also other types of resources are important, including their structure and usage, which constitute the investment potential of the education system. Investment potential is a set of all the means and resources available in the arsenal of the education system, including the conditions that provide the most favorable treatment in order to achieve the expected beneficial effect. In our case this is an increase in the quality of training specialists.

The investment potential of the education system in theory is the maximum possible social, pedagogical and economic return on each invested ruble and the total labor expended by objects and subjects of educational activity.

The difference between the invested material and intellectual costs and the actual social, pedagogical and economic results obtained in the form of the quality specialist training is an indicator of the effectiveness of using the investment potential of education. A quantitative interpretation of these concepts is very problematic, but it is possible through the use of expert assessments and conditionally correct decisions. Talking about the training of specialists, its potential can be viewed through the prism of investment in secondary special and higher education. Since the results of secondary specialized and higher educational institutions largely depend on the state of affairs in general education and preschool levels, it is reasonable to correlate the efficiency of training specialists with investments in the entire education system when mastering certain standard cognitive general cultural and professional competencies.

## II. MATERIALS AND METHODS

The methodology of educational research is estimated by the understanding and consideration of the fact that:

- the education system forms a personality and trains specialists for this particular society with constantly updated spheres of life and social conditions;
- the education system as the dominant factor of the student exposure creates a range of opportunities and conditions for the comprehensive and harmonious development of the actors of the educational process;
- the potential of the education system - a set of all available in its arsenal of tools and resources, including conditions, provides the most favorable treatment in order to obtain the expected beneficial effect;
- The education system is able to maintain students' high level of general cultural and professional competences as long as they have a common development strategy with the society and a single scenario of the development of the structure, extent and quality parameters of training specialists.

## III. RESULTS AND DISCUSSION

Despite the fact that the topic of the article is investment in the education system, this is not so much about direct financial investments, but about the potential of the education system capable of creating a range of opportunities and conditions for the comprehensive and harmonious development of actors in the educational

process. The investment potential of education is the recruitment of all the means and resources available in the arsenal of the education system, including the conditions that provide the most favorable treatment in order to obtain the expected beneficial effect. In our case, this is an increase in the quality of specialist training in the educational process. Education is considered in two ways: as a system of reproduction of society, and as a system of production and a multiple increase in the potential of an individual and a specialist — general cultural and professional competences, creativity, skills, abilities and knowledge designed to increase the vital forces of a person and society. At the same time, education, knowledge can contribute both to professional growth — competence and skill and bring the personality of a specialist to uncertainty. Where the degree of his social, pedagogical and knowledge utility may not meet the requirements of practice. Since by the time the training of a specialist was completed, the society had already changed the direction and value-oriented guidelines of its development, and, therefore, changed the request and it doesn't need such a specialist anymore. In relation, the educational system must acquire the properties of a self-organized and re-adjusting system, capable of rapidly and proactively changing the theoretical paradigm and the actual practice of training specialists.

The investment potential of education is a combination of all the means and opportunities available in the education system that are used and invested in objects and subjects of educational activities in order to obtain the desired beneficial effect. The investment potential of education consists of the following indicators:

- structural and content restructuring and modernization of the education system, its humanization, humanitarization, informatization and technologization;
- the expansion of the open space of continuing education for all ages from birth to extreme old age;
- anticipation of new activities, new areas of application of work, new professions, new non-traditional specialties in the future society;
- development of intellectual and creative abilities of a specialist's personality in the process of educational activities of the "knowledge society";
- the formation of highly competitive generation of specialists capable of anticipating and implementing qualitative changes in various spheres of society: in public policy, management and economic systems, science, culture and social construction of reality [3].

Meanwhile, the state of the Russian Federation does not dare to allocate financial resources for the education system, allowing it to perform functions in a satisfactory manner for the benefit of the same state. The sharp and continuous decline in spending on education in the 90s of the 20th century continued in subsequent years. In the 21st century, budget expenditures on education decreased from year to year, as did the number of budget places in specialized secondary and higher educational institutions. As a consequence of the chain reaction, a reduction in one fourth of the number of faculty members and the transfer of the third part to part-time employment (followed by their correlation to the group of the new social class - precariat).

In the 20s of the 20th century, academician S.G. Strumilin, and then V. A. Zamin, T. Schulz and E. Denison showed that investment in education is the most effective type of investment in human resources. [11; 7; 13; 6]. World experience of recent decades convincingly confirms this circumstance. In countries such as the United States, Japan, Germany, China, Singapore, and Hong Kong, most of the total income is derived from the use of conventional productive investment, in particular the use of human resources [4]. Human resources are estimated, mostly not by the number of able-bodied, but by their level of education, labor productivity and the quality of social institutions.

People begin to live with some potential capital (natural abilities), and it can dramatically increase in the preschool level of education, during training in general education, special and higher schools through training. However, not involved (or partially not involved) and unclaimed capital quickly depreciates, if it is outside of social dynamics, outside the educational system. Incomes of adults are dividends from the amount and type of "investments" that are spent in the process of educating their children, which are multiplied many times - a hundredfold and "boomerang" come back. It is quite normal and logical when the rewards correspond to the investment. Investing in human capital as a monetary valuation of the potential ability and acquired skills embodied in a person, which are used throughout their working life, allows productive and effective work, create benefits and values, and ultimately generate income.

One cannot agree with the statements of some theorists and practitioners from education that a higher quality level in the training of specialists of various qualifications and profiles can be achieved mainly through additional financial "injections" into the field of education. It is considered to be an axiom that the main problems in world and Russian education especially exist due to insufficient economic provision. Paradoxically, this is truth and false at the same time. The results of experiments on abundant funding of schools conducted in the 90s of the 20th century in some states of the USA turned out to be negative. In time, pupils from ordinary schools were ahead of their peers from experimental schools in terms of academic development. This led to a conclusion: that a high level of financial investment in education is not always a condition for increasing its efficiency. "Money and equipment are the necessary means of any type of education. American experience clearly demonstrates that, where the goal is unreasonable, multiplying the means only multiplies the madness. And no means can indicate what a reasonable goal would be" [1].

During periods of stagnation and the slow rise and development of a number of sectors of the economy and production in post-Soviet Russia (with the exception of agricultural production, oil and gas production and processing), government spending on education inevitably decreases. According to expert estimates, now the expenses of the Russian Federation on education are lower than in most developed countries of the world. In the list consisting of 32 countries, Russia occupies the penultimate place [9]. Budget money allocated for education is only enough to pay salaries and scholarships, but not for capital construction of premises, purchase of equipment, material and technical equipment of classrooms, laboratories, classrooms, and

encouragement of research work and scientific and educational publication activity of teachers. Educational institutions are forced to seek additional financial and other types of resources.

In modern conditions of post-Soviet Russia, the need to increase state spending on education is obvious and is the categorical imperative of time. At the same time, the state budget is "not a bottomless pit", and therefore the education system should focus on the targeted and rational use of incoming budget and extrabudgetary funds and should focus on finding and disclosing its internal reserves. In particular, the effective use of the potential of the education system, associated with general educational, general cultural and vocational training in new promising areas (profiles) not only can have a socio-pedagogical, but also an economic effect.

It is known for certain: an employee with higher education compensates for the costs of his training four times faster than with secondary and eight times faster for return time than an employee with primary education [2]. At first glance, these data imply an unambiguous conclusion about the need to ensure the priority of investments specifically in higher education. However, according to modern studies, the quality of the latter, therefore, its effectiveness, depends most of all on the level of students' school preparation, and the most valuable qualities of a modern specialist, creative abilities, are formed mainly in infancy and early childhood. Therefore, paradoxically, but the most significant reserves of efficiency of the university level of education are in the lowest - in the preschool level, and, therefore, a strategy designed for the long term should ensure the priority of investments in preschool education. It is this strategy for Russia that is urgently needed socially, since the creation of high-quality accessible for all families, built with regard to the highest achievements of psychological and pedagogical science, the system of preschool education, which accepts children from infancy, will allow in the shortest possible time to increase the birth rate in our country what is absolutely necessary to overcome the demographic crisis.

In addition, special and higher education institutions can replenish their budget deficit by organizing various forms of additional education and further vocational training. However, the scientific community and government officials stubbornly fail to notice the fundamentally new possibilities for increasing the effectiveness of educational investments, which have long been shown by innovators of secondary, special and higher schools. In particular, the integration of educational, industrial and research activities, general and vocational special and higher education allows not only to dramatically improve the quality of training of graduates, but also opens up almost unlimited opportunities for self-financing of educational institutions. In this case, the time lag between investment in education and their payback is reduced to a minimum. At the same time, students of all schools, including general education, special and higher, can in practice realize the principle of combining training with productive labor and master professions, which significantly expands their adaptive abilities and makes more professional orientation of young people, and, consequently, increases the efficiency of the system education.

In continuation of the research discourse, we will look at the issue from the opposite side and begin with the question: what is ineffective education? First of all, this is a discrepancy between the level of professional training of specialists and the requirements of the economy and the development of society. Secondly, the lack of social order and demand in the labor market for specialists in various fields (inconsistency between supply and demand). How are the concepts of efficiency and quality of education defined and combined? The concepts of efficiency and quality are considered economic categories. From the point of view of economics, if the subject is created, then there is quality, but there is a different level, a different degree of quality. If they talk about the quality of a trained specialist, they mean, first of all, the satisfaction of professional knowledge and skills with the specific requirements of the workplace. And this is achieved by organizing professional internships for students in the places where their regular practices are conducted. "Efficiency of education is the ratio of the result (the value of the specialist's return in the workplace per unit of time, expressed by the amount of profit from his labor) to the costs of preparation" [8, p.10-17]. However, as Lee Iacocca wrote, all economic transactions can be reduced to three words: people, product, profit. If there are people, they are in the first place, then there will be a product and a profit. The apparent economic efficiency is unthinkable without socio-economic efficiency: without the development of a working man, the disclosure of his potential [14].

It should be borne in mind that ideas about the effectiveness of the education system only through economic growth indicators will look limited. They should be supplemented with other indicators characterizing the quality of specialist training. Quality is a piece goods. Meanwhile, there are no quality measurement mechanisms. There are no correctly developed parameters and criteria for measuring the quality of education. There are a lot of different ideas about the quality of education. For example, the quality of education is defined as the increase in intellectual abilities. Qualitative is the education, that allows the graduate to begin his duties and perform the assigned professional functions immediately and without additional training. The result is the highest effect in the form of substantial savings of financial and other means, the maximum useful results at the output. However, to answer the questions: what is the real level of the quality of education, what quality of education does this or that educational institution give, what quality of education does this or that excellence give to a specialist, etc. will require a lot of time on access to such information, as well as physical strength to get it. At the same time, one can hope that the mastery of the whole set of technologies available in the arsenal of the education system for improving the quality of training of specialists will change the situation on the labor market when restructuring the economy and other spheres of society's life will depend on the specialists. The formation of demand for new professions and specialties, designed to make society transition to a more sustainable level of development, depends on when, how and who will start to introduce new technologies, new productions and new types of goods and services earlier and faster.

In the education system, a particularly important role belongs to the subsystem of pedagogical education, which

prepares specialists for the creation of educational potential, "human capital" absolutely for all sectors of the economy, culture, science, politics and management. Therefore, the priority investment of this subsystem in order to ensure the required number and high professional qualities of teachers meets the interests of the whole society.

To study the parameters of the training of specialists of pedagogical profile, it seems appropriate to highlight the following components that influence the formation of the quality of education:

- the level of knowledge and skills of applicants who have entered educational institutions of pedagogical profile;
- the level of competence of the teacher - the professionalism of the teacher;
- continuity and correlation (mutual correlation) of all three levels of the education system;
- educational, methodological and informational support of the educational process;
- material and technical equipment of classrooms, and laboratories;
- computer and multimedia support of the educational process;
- the use of technical training tools, interactive whiteboards and interactive technologies in the conduct of training sessions;
- organization of educational activities in which a student receives the maximum amount of knowledge, general cultural and professional competences per unit of intellectual and physical resources expended;
- the system of quality control of knowledge, general cultural and professional competencies acquired by the student.

Qualitative training of pedagogical specialists assumes formation of the need and interest in the process of knowledge; "Immersion" in the subject field of the disciplines under study and "penetration" into the world of knowledge, general cultural and professional competencies. Moreover, their training requires regular close repeated contacts with the professional environment through the organization and conduct of systematic pedagogical practices, both at the place of training and in other educational institutions. That significantly increases the level of competitiveness of a graduate specialist with a pedagogical profile, and, consequently, a chance for him to be employed, including not only by a training profile. It should be remembered that "a person sells not only goods, but sells himself and feels himself a commodity ... And, like with any commodity, the market decides how much these or that human qualities cost, and even determines their very existence. If the qualities a person can offer are not in demand, then he has no qualities at all" [12].

As Norbert Wiener wrote, new possibilities of the humanization of social labor, opened by scientific and technical progress, cannot be approached from the market point of view, from the point of view of the money saved,

but it is the free market slogan that has become dominant in the modern world, which has negative consequences. "There is only one way out - to build a society on human values different from the sale and purchase," the "father of cybernetics" came to this conclusion in 1947 [5]. More than 50 years later, George Soros also declared the denial of market fundamentalism as the extension of the principles of commerce to the areas in which they are strictly contraindicated (education is no exception) [10].

#### IV. CONCLUSION

Education is a technologically organized activity of purposeful impact on students for their mastery of cultural achievements and creative competencies. Education creates not just an abstract person as such but creates a personality for a particular society. First of all, education is the development of basic personal qualities of an individual's character, and only secondly, the development of professional skills and abilities. First, the individual must become a person (with a set of positive personality traits), then he will understand which profession to choose himself and what professional skills and abilities to acquire. Education is designed for a permanently changing society as a set of interacting social groups and communities. Education technologies do not arise in isolation, but in the continuation of the development of social technologies. Being a subsystem of society, the education system is not able to maintain a steady state of civic maturity and professional activity of students, if it does not have a common development strategy with society, a single scenario for the development of the structure, scale and quality parameters of training.

The role of the systems approach is that the study of relations between society and education involves an analysis of the effectiveness of the investment potential of education and the problems of society in which the younger generation and youth learn to live, and which shape values and interests, as well as the personality of a specialist. The real economy determines what to teach, and education how to teach, and how to form a personality. From the needs of the practice, the structure and scope of training of specialists is formed, and from the individual the social order to education.

Meanwhile, if only the third part of graduates of pedagogical educational institutions of post-Soviet Russia decides to work in the field of education, then this is one of the indicators of the inefficient use of the investment potential in the system of teacher training. A radical solution to this problem is beyond the capabilities of educational institutions - it implies at least a threefold increase in the remuneration of teachers and professors, the management apparatus of all the structural elements of the education system, and the state provision of their living conditions. The business of higher and postgraduate pedagogical education is to provide our students with modern scientific knowledge, the latest teaching and educational technologies and the basics of professional ethics; to train specialists who are able in the shortest possible time to lead the country to a high scientific and technical level of development of production and the economy, ahead of world achievements.

It is obvious and likely that in order to perform such tasks, the education system of Russia must carry out radical transformations, acquiring a flexible, diversified structure combined with the fundamental nature, introducing new learning technologies, methods for assessing and controlling the quality of acquired knowledge. Education should be prepared to meet the growing needs of society, associated with the continuous process of updating knowledge, with retraining and advanced training. Then education of any level and type is organically integrated with the lifestyle of a person whose motto one lives; therefore, one studies from early childhood to a very old age. A necessary condition for achieving such a goal is a multiple increase in all types of investment in the education system.

#### REFERENCES

- [1] E. Adler, "On the need for the development of international scientific relations in the field of modern technology of education", Specific technologies of modern education. International Congress, A series of works "Human Ecology", p. 23, 2000.
- [2] K. Angelovski, "Teachers and Innovations", 1991, p. 8.
- [3] P. Berger, T. Lukman, "Social construction of reality. Treatise on the sociology of knowledge", 1995, p. 323.
- [4] "Spring", no. 1, pp. 8–9, 2000.
- [5] N. Wiener, "Cybernetics", 1996, p. 326.
- [6] E.F. Denison, "Why Growth Rates Differ. Postwar Experience in Nine Western Countries", 1967, p. 329.
- [7] V.A. Zhamin, "Socio-economic problems of education and science in a developed socialist society", 1979, p. 183.
- [8] V.G. Puzikov, "Investment potential of education", in Higher education in Russia, no. 2, p.10-17, 2001.
- [9] O.N. Smolin, "Higher education in Russia: the struggle for quality or an attempt on human potential", in Higher education in Russia, no. 7, p. 30–37, 2015.
- [10] J. Soros, "The Crisis of World Capitalism", 1999, p. 261.
- [11] S.G. Strumilin, "The economic importance of public education", in Economic life, p. 63, 1924.
- [12] E. Fromm, "Anatomy of human destructiveness", 1994, p. 446.
- [13] T.W. Schultz, "Capital Foundation by Education", in Journal of Political Economy, no. 6, pp. 571–583, 1960.
- [14] Lee Iacocca, "Career Manager", 2007, p. 378.