

# Functional Literacy in the Context of Human Capital Development

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**Abstract** This paper aims at the characterization of conditions and factors, which influence the present-day functional literacy in the context of human capital development in Kazakhstan. At present, in the conditions of modern, dynamic development, the problem of the modernization of education is being actualized as a fundamental factor in the development of a competitive nation. The main direction of the global trends in the school education system was the transition from the traditional reproductive teaching method to a new constructive, competency-based educational model. It is designed to ensure the development of cognitive activity and independence of thinking in schoolchildren, that is, it is aimed at the formation and development of the personality itself, educated, creative, competent and competitive. The paper discusses the educational improvements in Kazakhstan through developing human capital and the development of the functional literacy of schoolchildren. The authors designed and presented examples of Kazakhstan's human capital development in comparison with other countries.

**Keywords** Functional Literacy, Literacy, Human Capital Development, Competences, Education

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## 1. Introduction

The impact of globalization and modernization of education on the economy, changes in technology, communications, and pedagogical science have led to the emergence of an information society for which the main products of production are information and knowledge. The formation of modern society required a qualitative increase in human potential and determined the primacy of

education in the process of socio-economic development. In this regard, education was reoriented towards the formation of a personality prepared for life, i.e. able to adapt to ongoing changes in society, actively and creatively think and act, intellectually, morally and physically develop and improve.

In the context of updating the content of education for our republic, the thesis is relevant that the more society is modernized, the greater is the role of education focused on social and personal development, that is, the development of "human capital", which is associated primarily with the development of education and pedagogical science. Based on this, the education system is aimed at the formation in young people of the qualities necessary for successful activity in modern conditions. The solution to this problem is carried out through the adoption of a set of measures aimed at the modernization of educational policy and school education.

On December 6, 2016, the Organization for Economic Cooperation and Development (OECD) officially announced the results of an international study assessing the educational achievements of 15-year-old students at PISA-2015 (Program for International Student Assessment), the main direction is natural science.

In total, over 500,000 15-year-old students from 72 countries and economies of the world took part in PISA-2015. Kazakhstan was represented by 5,780 15-year-old schoolchildren and students from 16 regions of the country (189 schools and 27 colleges). In comparison with PISA-2012, Kazakhstan's participants in the international test showed progress in all areas of research, as in mathematics, the growth was 28 points and in natural science - 31 points. The highest rate of increase in points in PISA-2015 was demonstrated by our 15-year-old readers in reading literacy (+34). Also, for the first time, all 15-year-old students of Nazarbayev Intellectual Schools (2,061 people) took part in the PISA-2015 project. NIS

schoolchildren's math and science indicators are in the top ten leading educational systems (Singapore, Hong Kong, Macau, Chinese Taipei, Japan, etc.). Participants from Nazarbayev Intellectual Schools in Mathematics scored 523, science - 517 and reading - 492 points.

Functional literacy is a person's ability to enter into relationships with the external environment and adapt and function in it as quickly as possible;

As you can see, the functional literacy of students in Kazakhstan's schools is increasing since in 2016, first in pilot mode, then in 2017, a renewed curriculum was launched throughout Kazakhstan.

## 2. Materials and Methods

According to the OECD, the world is increasingly faced with previously unknown global challenges, becoming increasingly unpredictable and vulnerable. We live in the world of VUCA (Volatile, Uncertain, Complex, Ambiguous). VUCA is a rapidly changing technology (4th technological revolution), natural disasters and man-made disasters, the threat of a new world destabilization and global demographic imbalance, increasing social instability, and imbalances, increasing the share of the unemployed and the NEET generation [1].

The OECD believes that in an unpredictable world, people must have higher-level competencies. Therefore, in 2015, the OECD Education Policy Committee for School Adaptation to the World VUCA launched the Future Education and Skills: Education 2030 Project.

The project consists of two stages:

- Preliminary (2015-2018 - analysis of the content of secondary education in OECD countries, preparation of an intercountry report, development of a single conceptual apparatus);
- The main (since 2018 - the development of new content of school education) [1].

The project consists of two stages and must answer the question:

- What competencies will people need in 2030 to overcome complex challenges and turn difficulties into opportunities for themselves and others?

The first phase of the project ended in 2018 with the answer to the following questions:

- 1) What do students of the 21st century need to learn?

- 2) What competencies should 21st-century students have?
- 3) What curriculum is needed in 2030?

In 2019 (in case of success of the 1st stage) countries will answer the following questions:

- 1) How will students learn the knowledge and skills of the 21st century?
- 2) How will this knowledge and skills be assessed?

Fundamental learning skills, as well as the assessment and teaching of the skills of the twenty-first century — all of this must refer to “learning how to learn”.

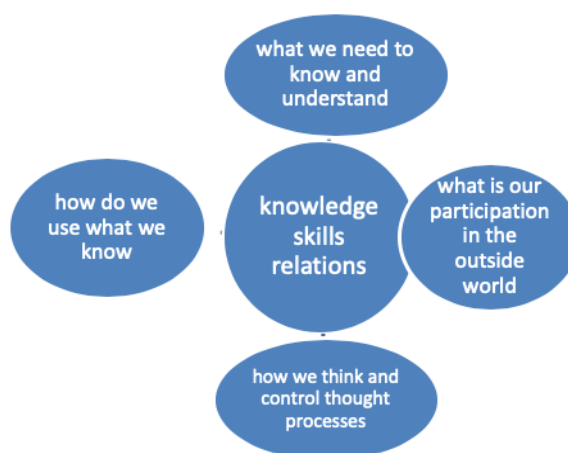
The surest way to prepare students for a changing world is to give them tools that are universal, reflective, self-directed and self-sufficient [2].

According to John Flavell [3], metacognitive knowledge consists of three components:

1. Self-knowledge is a human variable (general knowledge about how people learn and process information, as well as individual knowledge — their learning processes);
2. Knowledge of the task variable (knowledge of the nature of the task, type of data processing requirements);
3. Knowledge of the strategic variable (knowledge of cognitive and metacognitive strategies for the development of memory, attention, the concentration of perception, actions, decision-making, imagination, logical thinking, as well as conditional knowledge of the appropriate use of such strategies) [4].

But most importantly, on the basis of all the above, the school should give the graduate a meta-competence, i.e. teach children to manage mental processes, memory, goals, actions and to adapt as metacognitive skills (global awareness, active image of thinking, locus of control (personality trait to evaluate their abilities to influence the course of events); metacognitive regulation (self-regulation, planning); metacognitive reflection/action (self-esteem (in an objective context), relationship management, stress tolerance).

According to experts from different countries participating in the discussion of the program “Education - 2030” at the OECD site, these particular competencies will be the basis of the content of 21st-century school education [5].



**Figure 1.** Meta competences of a 21st-century student

The main direction of the global trends in the school education system was the transition from the traditional reproductive teaching method to a new constructive, competency-based educational model. It is designed to ensure the development of cognitive activity and independent thinking in schoolchildren, that is, it is aimed at the formation and development of the personality itself, educated, creative, competent and competitive. In the educational systems of the advanced world powers, the countries of the Organization for Economic Cooperation and Development (OECD), the emphasis is primarily on the development of competencies. Such countries achieve great economic success due to the high competitiveness of human capital (Korea, Japan, Finland, etc.).

Competence approach in education is an approach to the design of educational results based on competencies. The competency-based approach is one of the key methodological tools for realizing the goals of the Bologna Process. According to Benjamin Bloom's [6] well-known taxonomy in the world of pedagogy, the existing standard allows the student to master only 2 of 6 levels of knowledge - "know" and "understand". The new standard will allow reaching the remaining 4 levels of cognition such as "apply", "analyze", "synthesize" and "evaluate".

The curricula of the new standard of education are based on the competency-based approach, forming competences... "which underlie the functional literacy necessary for successful socialization. The design of the content of subjects uses the principle of a spiral that allows students to increase their knowledge, and skills gradually in topics and classes, moving from simple to complex" [7].

Consequently, the problem of the development of the functional literacy of schoolchildren as a factor in the formation of competitive human capital is being actualized. The OECD defines functional literacy as "... the ability of students to apply their knowledge in real-life conditions, to effectively analyze, justify, communicate

and solve problems in various situations" [8].

The five-year National Action Plan for the development of the functional literacy of schoolchildren adopted by the Government in 2012 is designed to ensure the focus, integrity, and consistency of action to develop functional literacy of schoolchildren as a key guideline for improving the quality of education in the Republic of Kazakhstan.

It identifies the mechanisms for developing functional literacy of schoolchildren such as updating education standards, curricula, and plans, updating learning forms, methods and technologies, developing a system for evaluating student learning outcomes, ensuring the active participation of parents in the education and upbringing of children, developing additional education [9].

As part of the implementation of the five institutional reforms of N. Nazarbayev, "Plan of the Nation - 100 Steps", special attention is paid to updating school standards for developing functional literacy and improving the quality of human capital based on the standards of OECD countries [10].

The updated content is based on the expected results, which will allow assessing students' academic achievements, determining the individual development trajectory of each student considering their abilities, as well as increasing their motivation to develop skills and abilities in teaching [11].

For determination of the state and prospects of the updated content of education and preparation of the competitive younger generation, it is necessary to:

- Identify promising scientific directions of its development;
- Generalize and modernize the methodology;
- Develop and implement innovative methods and tools;
- Find the best ways to improve educational work programs, which will mean the definition of common regulators of educational practice [12].

The competency-based approach puts forward in the

first place, not the learner's awareness, but the ability to solve problems. In this vein, V.V. Serikov [13] defines competence as "... a form of existence of knowledge, skills, education in general, which leads to personal self-realization and finding the learner his place in the world.

Here we share the opinion of J. Raven [14], which classifies competences into three types such as 1 type is not the only objective, declarative knowledge ("to know what"), 2 type is procedural ("to know how"), 3 type is value-semantic ("to know whys and wherefores").

Russian scientist I.A. Zimnyaya [15], summarizing all types of competencies, on the formation of which depends on the professionalism of a specialist, classifies them into three main groups:

- 1) Competencies related to oneself as an individual, as a subject of life activity;
- 2) Competencies related to the interaction of a person with other people;
- 3) Competencies related to human activity manifested in all its types and forms.

Kazakhstan scientists argue "... a new constructive, competence-based model of education is designed to ensure the development of cognitive activity and independent thinking in schoolchildren aimed at shaping and developing the personality itself, educated, creative, competent and competitive. Cognitive actions in such a model are an essential resource for achieving success and indicate the impact on the effectiveness of the activity and communication itself, self-esteem, sense-making and self-education of the student" [16].

The process of formation, enrichment, and distribution of allocated resources according to K.K. Kulambayeva, S.S. Dosanova and A.K. Kulambayev [17], correlates with the managerial task of implementing the predictive prospects for the individualization of the educational process, the development of students' subjective experience.

Functional literacy acts as a way of social orientation of the individual, promotes the participation of people in social, cultural, political and economic activities, as well

as lifelong learning. The ability to apply learning knowledge in real-life situations is... "an important component of functional literacy, which makes it the basis of the competence and competitiveness of the individual". The whole learning process loses meaning if the student is not able to apply his knowledge [18].

From psychology and pedagogy, the ability to control thought processes (universal learning activities) according to T.B. Tazhibayev [19] has several features:

- Are a prerequisite to the independent formation of the ability to organize learning and cognitive activity, using generalized methods of action;
- Do not depend on the specific subject content and, in a certain sense, are comprehensive;
- Reflect the child's ability to work not only with practical tasks (to answer the question "what to do?") but also with educational tasks (to answer the question "how to do?");
- Arise as a result of the integration of all formed objective actions;
- Compel to act consistently, clearly, focusing on the built plan.

According to G.A. Kemelbekova [20], functional literacy is the ability of a person, a society to enter into relations with the external environment and the ability to quickly adapt to changing conditions. Functional literacy is composed of elements of lexical literacy; the ability of a person to understand various kinds of state acts relating to him and to follow them; human observance of the norms of public life and safety rules, the requirements of technological processes in which he is involved; information and computer literacy. This initial level of functional literacy is characteristic of advanced civilized societies. There is another approach to understanding functional literacy, including the education of a person in the spirit of goodwill and friendliness, which ensures a culture of communication; personal and professional preparedness; professional and technological readiness. The opposite of functional literacy is functional illiteracy.

The main forms of functional literacy are presented in the following Figure 2.

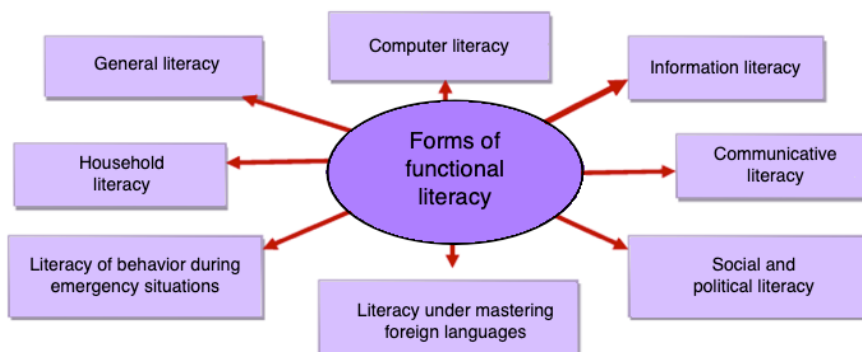


Figure 2. Forms of fictional literacy

These forms demonstrate the ability-oriented interaction with competencies such as the selection and use of various technologies; seeing the problem and finding ways to solve it; lifelong learning.

So, in literature classes, you can apply technologies such as RAFT (R (ole), A (udience), F (orm), T (opic), fishbone, essay, six smart hats, aquarium technique, "Brainstorming", at the lessons of the Russian language - strategies of cinquain, round-robin, cluster, telegram.

Such technology as "Brainstorming" is aimed at the development of oratory of students, which is the basis of functional literacy. When carrying out this technology, we suggested that students should be divided into 2 groups: the first is "generators of ideas" worked out in a short period of time as many solutions as possible to solve the arisen (proposed) problem, the second is "analysts", their work was that the proposed options were considered they and adding nothing, chose the most reasonable solution to the problem. At the same time, any criticism of proposals is prohibited and the essence of the problem and the conditions of the technology are described based on brainstorming.

Interesting in our opinion, the technology "Loki" is a well-known mnemonic method by which students create a "visual pyramid" from words characterizing an event based on the material that was viewed and read.

The essence of the competence approach is that it is not "ready knowledge" that is assimilated, but "conditions of the origin of this knowledge are traced" [21], where reflection plays the role of systematizing one's own experience, assessing and developing the missing knowledge and competencies.

So, K. Kozhakhmetova, Sh. Taubayeva and Sh. Dzhanzakova [22] note that "the conceptual foundations of pedagogical thinking and the teacher's methodological culture are currently changing. His position is changing from a relay of knowledge acquired by someone to a tutor and adviser".

In the formation of functional literacy, the system of assessing the educational activities of students is of particular importance. Unlike traditional, estimated parameters are divided into criteria. In each criterion, levels of knowledge, skills, and also activity indicators are highlighted. The assessment system is divided into current, formative and final. At the end of a quarter or six months, the student receives a certain set of points, which are divided into "excellent", "good", "satisfactory" [19]. As we see, in this type of assessment, the student has more opportunities to show, to prove himself. The student is evaluated in the activity, and this is very important in the formation of his functional literacy. Thus, such a grading system helps to form students' functional literacy in the classroom, develop basic skills, foster internal self-esteem, and increase student learning motivation [20].

We add that in the conditions of the humanistic

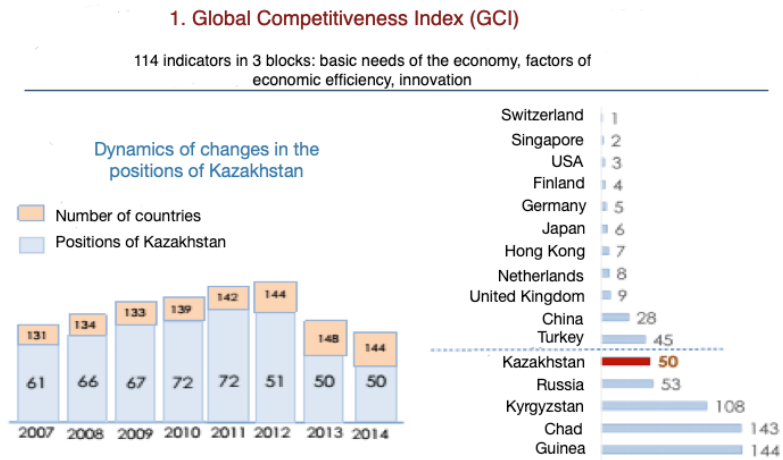
paradigm of education, the views on the concept of "knowledge" also change. Knowledge is increasingly understood as personified knowledge, i.e. "It exists at the level of the individual, it is extremely difficult to formalize it using the correct literary language, mathematical formulas, specific characteristics, and instructions, it is difficult to verbalize," besides, it is closely related to the experience of a particular individual, his actions values [23]. Knowledge, according to M. Polyani [24], acquires the character of personal (implicit) knowledge. As the scientist himself notes, knowledge manifests itself "only in the context of my situational involvement" [24]. Each knowledge, being a product of individual experience, serves its owner and cannot be transferred to other carriers, who, in turn, operate only with the knowledge generated in them. The American scientist P. Drucker [21] stresses that knowledge cannot be found in books; there is only information there, "knowledge is the ability to apply information in a specific field of activity".

Only people with the knowledge and skills to adapt to new conditions will be successful. J. Casner Lotte and J. Barrington [25] summarize, "... today, there is another set of skills - 21st-century skills that support innovation, including creativity, critical thinking and the ability to solve problems are in great demand". Van Ark [26] adds, "... level of education is no longer a guarantee of academic competence or the availability of skills".

Functional literacy, as we see, depends on many factors. In this study, we propose to consider the importance of human capital management as a major factor in the development of the world economy and society. Before the World Bank, economic growth is determined by 16% physical capital, 20% natural, 64% human capital, for example, in Japan, Germany and Sweden the share of human capital reaches 80%, and in Russia - 14%. Government policies and institutional reforms of developed countries are aimed at creating an enabling environment for the formation of human capital. Education and science, as the basis of human capital, determine the economic growth of countries.

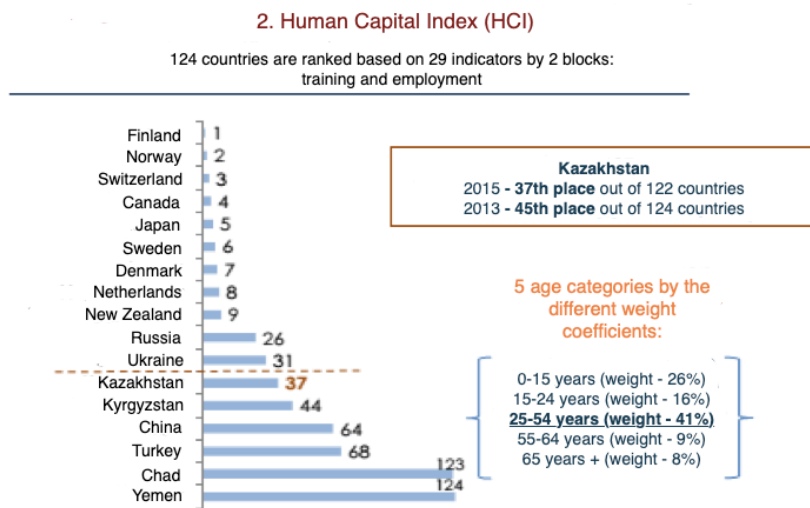
### 3. Results and Discussion

In the ranking of the Global Competitiveness Index according to the WEF, in 2019 Kazakhstan took 59th place among 140 countries [27] (Figure 3). Out of 12 factors of competitiveness, an improvement occurred on four factors; on eight factors, a decrease occurred. Out of 114 indicators, improvement occurred in 28 indicators, deterioration in 76 indicators, and 10 indicators showed no changes. The worst impact on the downgrade was the deterioration of the macroeconomic situation in the world in 2016 [28].



**Figure 3.** Global Competitiveness Index

In the “Human Development Index” ranking, Kazakhstan ranks 56th out of 188 countries, ranking among the countries with a high level of human development.



**Figure 4.** Human Capital Index

In the conditions of the development of the “knowledge economy”, only innovation can take a leading position in the competitive struggle. The global innovation index (GII) involves 143 countries, estimated at 84 indicators by 7 blocks such as institutes, human capital and science, infrastructure, financial market, business environment, knowledge, and technology productivity, creativity (Figure 5). The dynamics of changes in the positions of Kazakhstan among 143 countries showed a slight decline. This is due to the deterioration of macroeconomic conjuncture [27].

### 3. Global Innovation Index (GII)

134 countries, 84 indicators by 7 blocks: institutes, human capital and science, infrastructure, financial market, business environment, knowledge and technology productivity, creativity

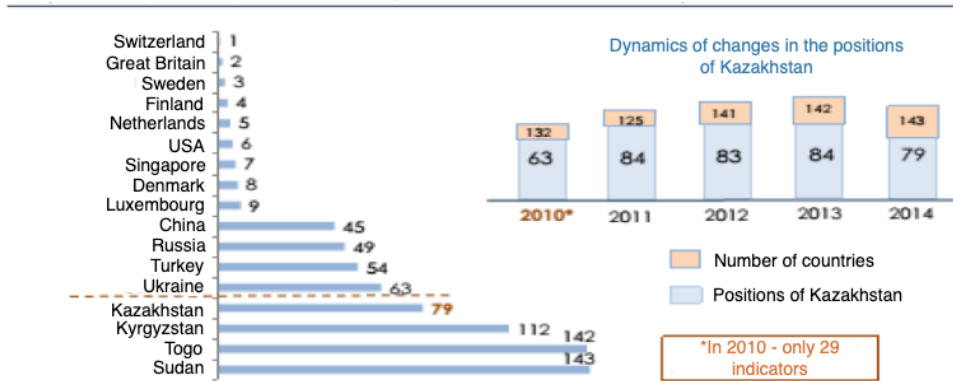


Figure 5. Global Innovation Index

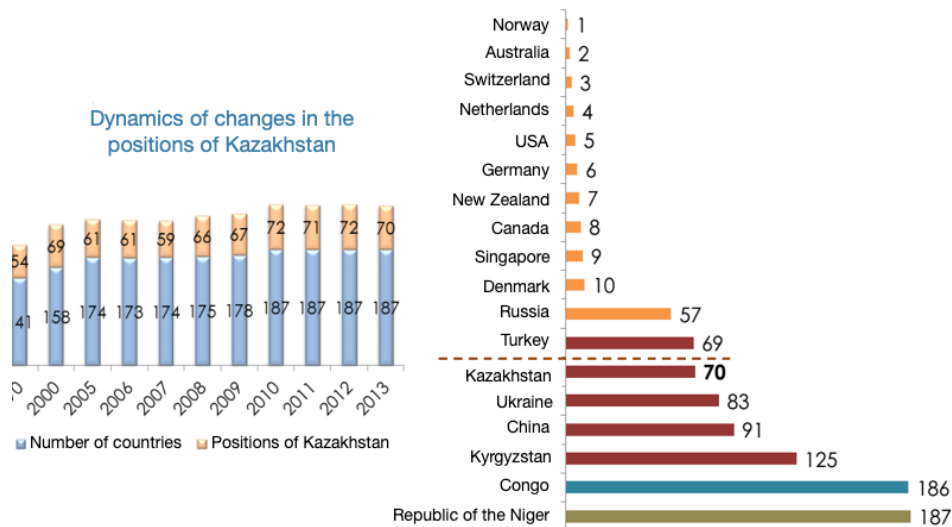


Figure 6. Dynamics of changes in the positions of Kazakhstan

Kazakhstan took the 58th place in the list of countries with the highest level of human development, according to the report of the United Nations Development Program in September 15, 2018. Of the 189 countries, 59 are in the group with a very high level of human development. Among them are Estonia (30th place), Poland (33rd), Lithuania (35th), Latvia (41st), Russia (49th), Belarus (53rd) and Kazakhstan (58th).

According to the UNESCO “Education Development Index” (EDI), Kazakhstan has been in the top 8 countries from over 100 countries for 10 years. High positions in EDI thanks to free and compulsory 11-year school education and pre-school education are achieved [29]. According to the Global Competitiveness Index, in 2017, in terms of primary education, Kazakhstan ranked 4th among 137 countries of the world, increasing its position from 118th place. It is noteworthy that according to the Legatum Institute, the level of education in Kazakhstan is

higher than in China and Turkey, this is confirmed by the fact that the country has always been among the 40 strongest countries in the Education category. The country was also recognized as the best in education in Central and West Asia and ranked first in the UNESCO index “Education for Everyone”.

The International Research Center Legatum Institute published a Prosperity Index for 2017, where Kazakhstan in general in all parameters took 72nd place out of 149. In this study, Kazakhstan has been participating since 2006 and during all this time the country managed to rise 20 positions higher, and compared with last year, Kazakhstan moved forward by 11 positions - from 83rd to 72nd place. The ranking is based on statistics provided by the United Nations, World Bank, Organization for Economic Cooperation and Development, World Trade Organization, Gallup, Economist Intelligence Unit, IDC, Pyramid Research [28]. The index is derived based on indicators in

nine categories, reflecting such aspects of social life and social welfare parameters as economics, entrepreneurship, management, education, health care, security, personal freedom, social capital, and ecology [30, 31]. In terms of economic competitiveness according to the Institute of Management IMD-2017, the position of Kazakhstan in the Education sub-factor improved by 9th position, occupying the 35th place in the world, losing only to Russia among all CIS countries, which ranked 26th. According to the results of studies of the international center Legatum Institute, Kazakhstan ranked 35th in the world in terms of the education index, “Kazinform” reports regarding the press service of the Ministry of Education and Science of the Republic of Kazakhstan.

As you can see, the achievements are not accidental, because, under the “Kazakhstan 2050” program, the country is making great efforts to increase the literacy rate of the population to 99.8% and to achieve the 100% mark of completion by the population of primary classes.

Public spending on education is, of course, one of the priority items in the state budget. This is an indicator of investments in the quality of the country’s human capital. Annually, the amount of funding did not fall below the bar of 3% of GDP. On average, since 1991 it amounted to 3.8% of GDP. In OECD countries, government funding amounts to 5-6% of GDP. Kazakhstan came as close as possible to this indicator from 4.5% of GDP only in 2012 (6.4% in 1991, but with a GDP of only 85.8 million tenge). Given the annual GDP growth in the country, the total amount of resources allocated to education remains relatively stable [29].

Thus, it should be noted that in the framework of the “Kazakhstan 2050” program, the country is making great efforts to increase the literacy rate of the population to 99.8% and to achieve the 100% mark of completion by the population of primary classes [19]. Education and science, as the basis of human capital, determine the country’s economic growth. The level of education in Kazakhstan is quite strong - this is confirmed by the fact that the country has always been among the 40 strongest countries in the category “Education”. The country was also recognized as the best in the field of education in Central and West Asia and ranked first in the UNESCO index “Education for Everyone”. Government spending on education is one of the priority items in the state budget. This is an indicator of investments in the quality of the country’s human capital [27]. The main source of investment in education is the state in the long term. In absolute terms, the amount of Kazakhstan’s funding for education annually did not fall below the 3% level of GDP. On average, since 1991 it amounted to 3.8% of GDP [29].

In fact, human capital is subject to significant changes depending on the economic and social context of a country or territory, and as such its development should be considered not only as the maintenance of the effective status quo but as the ability of stakeholders involved in the

development of human capital (its creation and use) to adapt to changing circumstances, predict changes and act in accordance with these predictions.

In the framework of this dynamic development, aimed at continuous and efficient implementation in terms of relevance, sustainability, and innovation, the process of capacity building guarantees generation and maintenance, as well as the evolution and adaptation of stakeholders’ capabilities concerning policy analysis and policy-making.

When a country is characterized by an appropriate, sustainable and innovation-oriented political framework and, through institutional mechanisms, it is possible to take care of its development process, it can be considered fully capable.

## 4. Conclusions

Summarizing the above, we add that a systematic approach is needed to develop the most important skills, the task of which should be an integral component of the curriculum.

As aspects of educational activities that most affect the quality of education, the following are distinguished by the quality of personnel, which implies a high qualification of teaching and managerial personnel; the quality of educational programs, combining the level of teaching and innovative technologies, their compliance with government orders and public demand [25].

According to domestic researchers, the current trends in the education of the republic and the challenges facing its various levels necessitate a rethinking of their role, function, and place in the general education system, the development of new approaches in their future development [26].

We consider it necessary to determine the state and prospects of the updated content of education and training of the competitive younger generation:

- Identify promising scientific directions of its development;
- Generalize and modernize the methodology;
- Develop and implement innovative methods and tools;
- Find the best ways to improve educational work programs.

Thus, the goal of modernizing the quality of education, its transition to new content is the development of the functional literacy of schoolchildren.

This approach to the definition of core competencies is consistent with the understanding of the fundamental goals of education outlined in UNESCO documents:

- Teach to gain knowledge (learning to learn);
- Teach to work and earn (learning for labor);
- Teach to live (learning for existence);
- Teach to live together (learning for life together).

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