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Comparative analysis of key indicators of the education system of Kazakhstan

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Abstract

The article looks at the key indicators of the education system of Kazakhstan, the dynamics and effectiveness. Some key indicators presented includes integral indexes of efficiency: social and economic context of Kazakhstani education; accessibility and equality. The purpose of this work is to provide objective information about the current educational system of the Republic of Kazakhstan as a multifunctional high society state. The methodology used for the theoretical basis of the study was general theoretical research of domestic and foreign scientists - K. Rogers, A. H. Maslow, J. Karayeva, M. Jadrina. Analysis of scientific and theoretical literature, world and international conventions (UNESCO, UN), national reports on the Republic of Kazakhstan; scientific and experimental analytical data were some processes the paper adopted. According to the results from this research paper confirms the notorious fact that the importance of the interrelated nature of all components – program content, teaching methods and evaluation mechanisms - has frequently been raised.

Keywords: key indicators, education system, Kazakhstan, evaluation, comparative analysis, modernization

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1. Introduction

The primary basic public welfare is education and spiritual enrichment of people. The concept of 'education for all' defines education as an opportunity to change, to change one's knowledge, values, behaviour and way of life, in an effort to survive, to improve the quality of one's life and that as well as the next generations life (https://www.unesco.org). In 2015, the United Nations General Assembly had adopted 17 sustainable development purposes. In contrast to the previous Millennium Development Purposes, there is a strengthened global framework for monitoring progress in all major aspects of national development. After the urgent aims of 'poverty reduction', 'hunger prevention' and 'good health and well-being', the fourth 'quality education' was established. By this act, the countries of the world confirmed that sustainable development is impossible without qualitative individual resources, without its main source of education (https://www.un.org).

UNESCO has classified the main types of learning outcomes (https://www.unesco.org) as follows:

1. Knowledge: The main cognitive findings to be achieved by all learners (including reading, writing, numeracy and basic knowledge of subjects);
2. Values: solidarity, gender equality, tolerance, mutual understanding, respect for human rights, rejection of violence, value of human life and self-esteem.
3. Skills and competencies: problem-solving, experimentation, teamwork, living and interacting with others and learning skills.
4. Behaviour: willingness to accept in practice what has been learned.

Also, according to UNESCO, if every student from low-income countries completes school with basic reading skills, 171 million people could be rescued from poverty. If all mothers in these countries had primary education, 1.7 million children could be saved from stunting, with 12.2 million children in secondary education (https://www.globalpartnership.org).

A special place in the organisation of assessment processes is occupied by humanistic psychology (Maslow, 1982; Rogers, 1990), which, considering the highest values and main characteristics of a person as humanistic orientation, aspiration to justice, beauty and truth, puts forward their conditions for the actualisation of personal potential of a person.

According to their theory, each student involuntarily waits for the control procedure at the moment of obtaining knowledge. Perception of learning information is accompanied by the development of an imminent orientation of consciousness to its subject (educational and cognitive activity). The process of interaction between the internal consciousness and the external flow of information is born, possessing (according to the assessment of the individual) sufficient and necessary novelty, as well as appreciably necessary, exceeding the threshold of consumer and cognitive value. The learning process generates an intention – the main property of 'ugly thinking'. It is based on self-overcoming, self-education and self-excitement. These manifestations are realised in the process of realising the cost of acquired knowledge and self-transformation of an individual simultaneously with their personal isolation.

The analysis of the ErgoData created by the teacher, and synthesised as the realisation of more than 50 educational functions (with the predominance of the three major educational, training, and developmental functions), allows us to present it in the form of some sets of semantic units that form discrete elements – educational messages.

Many cultures have always placed special emphasis on the importance of the younger generation's skills necessary for functioning in society. These skills are constantly changing and are dependent on the development of technologies and ways of communication between people. Modern curricula in many countries now focus more on information technology learning. In some countries, the focus is on the social and interpersonal skills that young people need as they try to take their place in society. Many education systems focus on social cohesion, environmental awareness and human rights, reflecting the

desire of policymakers to enable the next generations to take their place as citizens in a rapidly changing and increasingly complex society.

2. Problem of this research

The traditional 5-point system of student assessment, practiced since the Soviet education system in the Republic of Kazakhstan, has ceased to meet the requirements of the new learning objectives. Clearly, the system fulfils its role – to assess the knowledge of students within the studied material in a measurable form. At the same time, the 5-point system in evaluating the students' ability to self-education fails to provide detailed and necessary information neither to teachers nor to the trained person. In addition, this assessment does not provide any support for students' personal development and self-identification of their own success and milestones for their further growth.

For many decades, the approach to evaluation was to compare achievements of one student with other students' results, and this approach to evaluation had a range of deficiencies, which are as follows:

- There are no clear criteria for assessing the achievement of learning outcomes understandable to students, parents and teachers;
- The teacher makes a grade using the average level of the entire class, but not the unified achievement criteria for individual students;
- The grades assigned to students do not provide a clear overview of the acquisition of particular knowledge and skills in particular sections of the curriculum, which makes it impossible to identify the specific learning path of each student;
- The final grade takes into account the current grades, which is not an objective assessment of the final learning achievement;
- There is no real-time feedback between the student and the teacher in the learning process, and this does not motivate learners to learn at all.

Since gaining independence in Kazakhstan, the scientific and pedagogical community has been in constant search and establishment of a new, more qualitative system of assessment of learning results of students, as well as changes in the entire structure of education in the country. This includes signing of the Bologna Convention, involvement of Cambridge University scientists, introduction of a criterion system of evaluation and updating of Ph.D. The above-mentioned changes and innovations have led to a tremendous criticism on behalf of society.

To solve these problems, let us review the effectiveness of Kazakhstan's education at the current stage what has turned out to be true, what has changed and which problematic issues or points of intersection of opinions are relevant.

3. Research focus

In connection with the growing globalisation and increasing network of transnational higher education providers, the state programme of education development in the Republic of Kazakhstan is primarily aimed to increase the level of the national education system competitiveness. One of the central tasks of the developed state programme is the creation of a unified National System of Education Quality Assessment (NESQA; http://edu.gov.kz). The purpose of the NESQA is to attain the educational quality that provides national educational system and citizens of the Republic of Kazakhstan competitiveness in the international educational space and labour market.

The main objectives of the NESQA of the Republic of Kazakhstan are:

- Institutional assessment of the educational quality at all levels through certification, accreditation and monitoring procedures;
- External assessment of students' achievements at all stages of education;
- Assessment of teachers' and teachers' activities with further transition to international certification of technical higher education faculty;
- To improve the teaching and learning process;
- To develop and implement effective and scientifically grounded methods and indicators for the education quality assessment based on international experience;
- To conduct a systematic and comparative analysis of both the quality of educational services at schools and the sustainability of the education system;
- Obtaining objective information on educational system conditions necessary to ensure the constitutional rights of citizens to quality education;
- Participation in international research on education quality assessment.

Nowadays the Committee of Control in the Area of Education and Science of the Republic of Kazakhstan and its regional departments function in each of the 15 regions of Kazakhstan. They provide state expertise of the educational institution, monitoring and statistical data to the Ministry of Education and Science of the Republic of Kazakhstan in parallel with the regional departments of education.

4. Methodology of research

4.1. General background of research

The comparative analysis of the key indicators of the education system of Kazakhstan is based on the indicators of the International Programmer for the Assessment of Educational Achievement of Students (PISA) of the OECD and refers to country and thematic studies, the results of the NCES, statistical data of the Ministry of Education and Science of the Republic of Kazakhstan.

5. Sample of the research

The current secondary education system in Kazakhstan is currently undergoing a process of reform in several directions simultaneously, and the system of assessment as a key component of education is also undergoing changes. This is evidenced by the statistical data of the National Report on the State and Development of the Education System of the Republic of Kazakhstan published in 2018 (Nurlanov et al., 2018). We have selected the following integral efficiency indices: socio-economic context of Kazakhstani education; accessibility and equality; condition and environment of education; quality and efficiency; and scientific and methodological update.

6. Instrument and procedures

The methods of research included analysis of scientific and theoretical literature, world and international conventions (UNESCO, UN) and national reports on the Republic of Kazakhstan. The results of the sociological survey among pupils of senior, 10th and 11th grades of secondary general education schools, lyceums and gymnasiums of the central, northern, south-western, north-eastern, southern and south-eastern regions of the country also form an experimental part of the survey. This experiment was conducted by Kurakbayev University and Omarbekova of Nazarbayev University (Kurakbaev & Omarbekova, 2015).

7. Data analysis

The data provided are up to date and cover the period 2015–2018.

8. Results of research

The analysis of key indicators of the education system of Kazakhstan is presented according to the data of the national report on the state and development of the education system of the Republic of Kazakhstan following the results of 2017 (Nurlanov et al., 2018) and prospects of educational policy of Kazakhstan © OECD 2018 (www.oecd.org/education/policy-outlook):

- Socio-economic context of Kazakhstani education

The contribution of education and science to the Global Competitiveness Index is measured by the two indicators: three statistical indicators and nine surveys. At the end of 2017, the position of the Republic of Kazakhstan was improved on two out of three statistical indicators: 'Primary education coverage' (+114 positions), 'Secondary education coverage' (+3 positions) and 'Higher education coverage' (2 positions) (Table 1). In UNESCO's database on secondary education coverage in 2016, Kazakhstan moved up from 42nd to 21st place, and remained in the third place in terms of tertiary education coverage, despite the overall decline in the number of universities. A significant result was achieved in the indicator 'Primary education coverage'. In 2017, Kazakhstan moved up from 118th to 4th place in primary education coverage (+114).

Table 1. Dynamics of the positions of Kazakhstan by indicators education and science in general and competitiveness index

Item number	Indicators	Ranks					
		2012	2013	2014	2015	2016	2017
1	The quality of primary education	72	69	64	63	70	68
2	The enrolment in elementary schools	102	118	116	118	118	4
3	The enrolment in junior high schools	35	29	42	42	21	18
4	The enrolment in high schools	60	58	62	61	61	63
5	Quality of education system	101	88	76	67	73	77
6	The quality of mathematics and science education	81	75	72	71	69	64
7	Quality of management schools	103	96	92	101	106	100
8	Internet access in schools	67	52	56	41	29	39
9	Access to research and educational services	72	65	66	55	51	59
10	Quality of research organisations	108	102	99	81	63	78
11	Collaboration between universities and business in R&D	90	79	88	88	66	75
12	Availability of scientists and engineers	104	98	83	70	64	66

Among the nine survey indicators of education and science, the growth was recorded by three indicators. The largest increase was in the indicator 'Quality of management schools' (+6), followed by 'Quality of mathematics and science education' (+5) and 'Quality of primary education' (+2). This is mostly conditioned by successful participation of Kazakhstan's schoolchildren in international research TIMSS 2015, PISA 2015 and PIRLS 2016. We believe that Kazakhstan's participation in international research has prompted reform of the national educational system standard, increase in the proportion of elective classes with schoolchildren of science and math and development of a national implementation plan for strengthening mathematical literacy, and for primary school students – reading literacy. For the first time in Kazakhstan, actions such as performance of monitoring tasks on a series of Maths disciplines for teachers started actively. The requirements of teachers' tests for the qualifying categories also changed: added a tour, where a teacher passes the tests that consist of psychological,

pedagogical and subject questions. Teachers who have not gained the required qualifications will not be allowed to take part in the next round of qualification tests.

In terms of the remaining six indicators, Kazakhstan reduced its positions: 'Quality of the education system' (−4), 'Internet access in schools' (−10), 'Accessibility of research and educational services (−8) and 'Quality of research organisations' (–15). The authors of the article believe that the reason for this is the fact that during the 70-year period of the Soviet Union, the territory of Kazakhstan was mainly a testing base. Now the young state is transparent to the international scientific community, students have the opportunity to get a high-quality education abroad and to participate in scholarship programmes from the world's leading universities. In Kazakhstan itself, a giant Nazarbayev University has been created. It is a university with research laboratories, with the assistance of Cambridge University academic staff. The main problem is that only a few students after graduation from a foreign university will return to their homeland, and they will try to establish themselves in their higher education country as well as pursue their master's and doctoral degrees.

In the Human Capital Index in 2018, Kazakhstan defined 58th position, confirming the category 'very high level of human development'. Here, statistical indicators have played a major role: gender equality in secondary education, enrolment in both primary- and secondary-level education, and coverage of TPE and third-level education (http://www.hdr.undp.org).

The main advantage is that Kazakhstan has made great progress in the improvement of the qualitative assessment and analytical processes at various system levels. Internal discussions are taking place in schools to improve practices with the participation of the teaching community. The main challenge at the moment is compliance with international standards, quality and accessibility; understanding of assessment and analysis tools as a mechanism for improvement (www.oecd.org/education/policy-outlook).

Nevertheless, attention should be focused on the socio-demographic indicator of the education system of the Republic of Kazakhstan. In 2017, almost all school principals had at least higher education, of which 2.8% had a postgraduate degree. In the interests of teachers, there is a career system in place where a certification process known as certification is in place. In a national survey (2012), almost two-thirds of teachers in Kazakhstan noted that one of the factors that can hinder effective learning is insufficient qualification. Teacher qualifications have improved significantly in recent years. For professional development purposes, teachers and school administrators should take professional development courses at least once every 5 years; they are also eligible for other professional development courses. Conditions in Kazakhstan include low pupil/teacher ratios as well as low salaries.

Kazakhstan has taken some actions to upgrade the quality and status for the teachers' career. The country worked towards the improvement of data quality and assessment processes.

- Accessibility and equity

In 2017, it was the first time when the UNT was divided into two stages: the final exams at school and the initial exams at the university. The reason for this innovation was the fact that UNT showed a bad result as a part of evaluation of quality of secondary education in Kazakhstan. All these years, UNT was perceived exclusively as an entrance exam to the university. Since 2017, the new format of UNT includes 120 questions in five subjects: three obligatory (history of Kazakhstan, mathematical and reader literacy) and two profile ones, depending on the specialty to which the candidate plans to apply. The entrance result remained at the level of 50 points. The average score of school leavers was 80.5 points out of 140 possible, in creative specialties – 30.09 points out of 40 possible. In 2017, 15.9%, or 14,063 people (14,252 in 2016) did not pass the threshold for admission to universities. Over 120 points were scored by 6.8% of people. None of the participants scored a maximum of 140 points (http://www.testcenter.kz). In 2017, for the first time since the introduction of testing, it was possible to bridge the gap in scores between Kazakh and Russian-language schools. Whereas 5 years ago, the difference between Kazakh and Russian schools was 9.76 points and in 2017 the difference between Kazakh and Russian schools was 9.76 points. The difference between the difference between the Kazakh

and Russian schools decreased to 0.1, but it was already in favour of schools with the Kazakh language of instruction (Figure 1). NCT has been working to provide graduates with the opportunity to take testing in English since 2018. In 2018, 28 students had chosen to pass UNT on English (Me = 85).

In 2017, 5,177 school leavers took advantage of the opportunity to retake the UNT, which is 1.3 times higher than in 2016 (3.873). Repeated submission does not give an opportunity to apply for distribution of state grants. However, this is a unique opportunity for applicants who have not scored a threshold point at the first time to enter the university. In 2017, the average score of the repeated UNT was lower than the average score according to the results of the main testing of 76.86 (−3.64). According to the results of additional testing, 4,176 graduates got the second chance to enter the university, which is 1.6 times more than in 2016.

Another opportunity for Kazakhstanis to enter the university is 'conditional admission', which has been in effect since 2016. Applicants who did not pass the threshold level according to the results of the main or repeated testing may be enrolled in the university on a paid basis by full-time study. Upon completion of the first semester, the next test is conducted for 'conditionally enrolled students'. Upon completion of 'conditional admission' 462 graduates entered the university, which is 1.7 times less than in 2016.

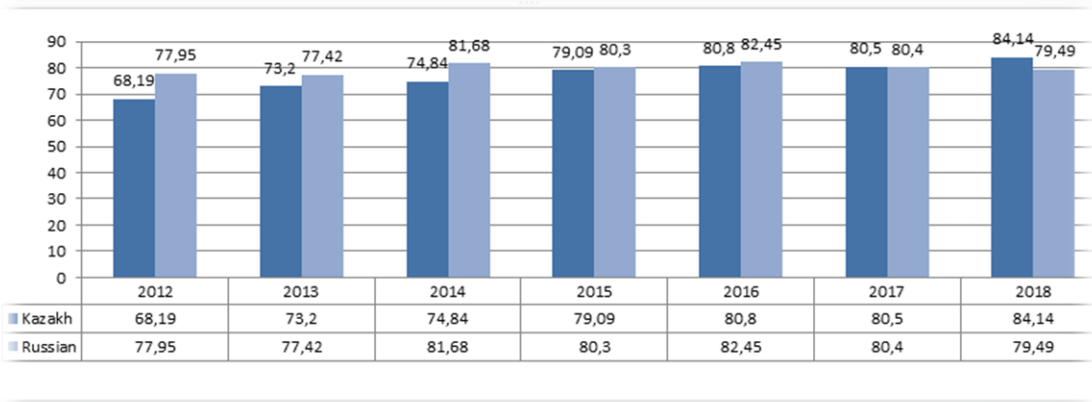

Figure 1. UNT results by teaching language of learning, 2012–2018 (Me).

We would like to pay attention to a number of students who passed, failed and complained about their UNT results during 2012–2018. The total number of complaints went down from 1,170 (2012) to 639 (2018).

Table 2. Result of UNT, 2012–2018

Year	Number of participants	Passed on Kazakh language (%)	Passed on Russian language (%)	Failed (%)	Me	Number who reached maximum score	Number of complaints
2018	98,698	75%	25%	14%	83	1	639
2017	88,583	76.33%	24.6%	15.8%	80.5	1	199
2016	84,042	73.4%	26.6%	16.95%	81.2	19	547
2015	82,865	72.21%	27.79%	18.6%	79,4	5	347
2014	87,593	70.4%	29.6%	23%	76.9	4	402
2013	71,592	68.61%	31.39%	28.8%	74.5	1	659
2012	117,433	66.93%	30.07%	36.78%	70.9	3	1,170

However, while these exams are another step towards improving the system, the review showed that it is still necessary to take into account more advanced skills, including problem-solving and innovative

mindset. OECD identified the following determinants: making decisions to maintain or reward students; annual monitoring of school progress; monitoring the pedagogical performance of teachers; and identifying curriculum aspects for improvement.

- Learning environment and context

Since 2011, a new content of school education started. It was the development of schoolchildren's functional literacy, self-search skills, critical analysis and appraisal. In 2016, all educational institutions switched to the new criteria approach for evaluating students' achievements. This system started in the first grade where teachers underwent by special training from the Ministry of Education and Science. The implementation of new evaluation system is difficult process both for teachers and students. Many of them even now do not understand the main concept of formative and summative evaluation.

However, the OECD study noted that teaching methods that work for gifted students in Nazarbayev Intellectual Schools may not always work well for children from less income families or in rural schools. It is crucial to develop a curriculum (including teacher training programmes) that meets the needs of students with different strengths.

In our view, the following problematic aspects includes psychological barriers to social acceptance of novelty, inadequate explanation from the authors, ongoing changes in the members and leadership of their working groups and the quality of learning assignments and teaching materials.

Nevertheless, since September 2017, the project started with the following activities 42% of schoolchildren switched to the updated content of education – first, second, fifth and seventh grades. The updated state educational standard was the basis for the elaboration of the student academic performance evaluation indicators, as well as the curriculum and the primary, basic and general secondary education programmes. The new standards will no longer rely on a basic thematic concept, but will incorporate social and emotional skills such as critical thinking and creativity. The content of the updated manuals from 2016 is focused on competence development rather than learning.

Simultaneously with the introduction of the new assessment system, a gradual transition to English language teaching in high schools is in progress. In the pilot phase, 153 schools in Kazakhstan launched the English language teaching of physics, chemistry, biology and IT in the 10–11th grades. The Order of the Ministry of Education and Science of the Republic of Kazakhstan (2017) Bilingual textbooks and English textbooks for the 8–10th grades in four subjects was tested in 16 state schools. The textbooks for 11th grades are currently being prepared. However, despite the fact that thematic teachers received the English language training and subject teaching methods in English from JSC 'Orleu', 'USTAZ Professional Learning Centre', 'Nazarbayev University' and JSC 'Nazarbayev Intellectual Schools' (2016, n = 750 people; 2017, n = 12,502), few are able to teach the subjects in English. However, this issue is a matter of time, as sufficient and comprehensive communication activity will gradually solve this problem. In addition, from 2017 onwards, they will be compensated 200% of their basic earnings after receiving a language certificate over B1. Another 357 schools offer additional English language classes, such as extra-curricular activities and lexical activities. Since 2016, English education in preschool started for children over the age of five.

Based on our own observations of the younger generation of Kazakhstan's teachers have ambiguous opinions about English. The teacher's consciousness has changed – regardless of age, length of service and the subject taught, now he or she is ready to learn the language in an arc, to refract it within the framework of professional activity and social activity.

- Quality and efficiency

According to the statistical data of the national report about the state and education system development of the Republic of Kazakhstan (according to the results of 2017), the state entered the top 10 leading countries by TIMSS 2015, and achieved the most significant growth in scores in Math among eight grades (+41) (Nurlanov et al., 2018). In science disciplines, the results of Kazakhstan' eighth graders (533 points) were better than their peers from many developed countries. In this authoritative international study, schoolchildren from Kazakhstan have shown results comparable to those of Russia

and outrun their peers from the United States, England, Germany, Canada, Australia, Israel, Sweden, Denmark, the Netherlands, Poland, Czech Republic, Lithuania, Malaysia, Turkey and other countries.

However, the results of the international study of PISA 2015 revealed quite opposite results: students in CIS are more familiar with the tasks and concepts that can be attributed to formal mathematics, rather than to applied mathematics. For example, the ninth-grade students in CIS noted that they more often work in math lessons with concepts from algebra (quadratic and exponential functions) and geometry (vectors, polygons), solve equations, than with real-life word problems. Compared to other countries, the frequency of formal math problems is one the highest among them.

The results of Kazakhstan among the fourth graders in TIMSS 2016 in Maths were 40 points higher than the international average. According to natural sciences, fourth graders from Kazakhstan beat their peers from the USA, England and Germany. The fourth graders scored well in Maths (Me = 550) and science (Me = 544), with 8th and 12th places, ranking among the countries, respectively.

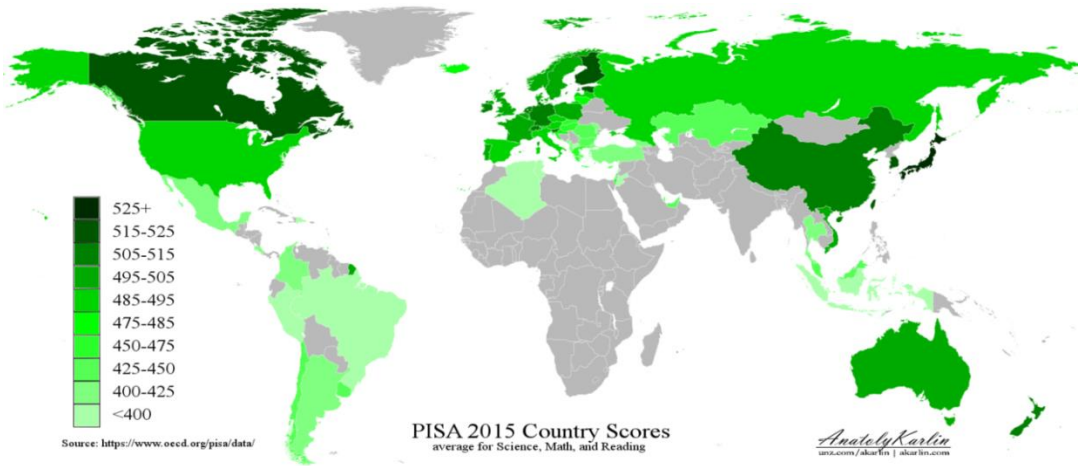

Figure 2. The result of PISA 2015

In PISA 2015, national students improved their positions in all three areas of the survey: 460 points in Mathematics, 456 points in Natural Sciences and 427 points in Reading. However, the average score for Kazakhstan remains below the OECD average (Me = 66). More than 30% of students did not reach the minimum literacy level in all three dimensions. Most of Kazakhstan's students fell behind in reading literacy (over 40% of students were unable). Critical reading remained the weakest area of Kazakhstan' student training.

According to PIRLS 2016, Kazakhstan ranked 27th among the 50 countries' participants at the primary education level. The country for the first time took part in this international survey on the assessment of fourth graders' reading skills. The average index of the fourth-grade students of RK was 536 points, which is 36 points higher than the average value of the PIRLS scale (Me = 500). According to the survey results, fourth graders in Kazakhstan were better in their ability to interpret and integrate text message details comparing to their ability to find information and to draw conclusions.

In 2017, the indicator of external assessment of academic achievements (IEAA) of the fourth-grade students of the Republic of Kazakhstan was higher than in 2016, the growth was in 1.16 points. This monitoring of schoolchildren's academic achievements was carried out in mathematics and reading. [For each subject there were 15 tasks in the test with the choice of one correct answer out of four offered options (grade: 1 correct answer – 1 point). Reading includes tasks to check the literacy level of the students.] The IEAA average score of four classes in Kazakhstan was 19.75 points out of 30 possible (18.59 points in 2016), i.e., they successfully completed 65.8% of all test assignments. The results in terms of subjects did not differ significantly (literature reading – 9.64 points and mathematics – 10.12

points). A total of 52,702 fourth-grade pupils participated in the HEI procedure in 2017, including 37,645 in Kazakh and 15,057 in Russian.

However, according to OECD data, the main challenges identified (2009, 2014, 2015 and 2017) are as follows: despite the progress made, the PISA indicators in Kazakhstan are still significantly below the OECD average, in particular in terms of reading literacy. Previous OECD reports have also pointed to the need to support socially vulnerable or learning-disabled students. Education also needs to be made more relevant and relevant to labour market needs, student interests and future needs.

- Scientific and methodological updating

As for the key indicator 'conditions and learning environment', it has already been said that since 2016, a criterion evaluation has been introduced in primary school. According to Karaev (2014), the criterion evaluation is aimed at a meaningful and objective assessment of pupils' performance. This methodology, based on the principles of personal and competency-based approach, is designed to ensure transparency and validity of the process of assessing the quality of school education Harlen and James (1997), believe that person-centred and competency-based approaches to assessment are expressed in the assessment of the quality of learning and achievements of each student individually. The assessment is carried out according to criteria developed and defined collectively, which reduces the effect of subjectivism in the assessment.

Due to the fact that all innovation processes related to the criterion system of evaluation, for the first time were introduced in Nazarbayev Intellectual Schools, normative and substantial document flow was developed by scientists working in the concern Nazarbayev University, which is a single link system with Nazarbayev Intellectual Schools. In the experiment, teachers who received special training from invited trainers from Cambridge University could take part in the experiment and the effectiveness of the experimental activity was covered in scientific and pedagogical publications. Thus, specialists of Nazarbayev University Kurakbayev and Omarbekova (2015) conducted a sociological survey among pupils of senior, 10th and 11th grades of secondary schools, lyceums and gymnasiums in different regions of Kazakhstan in order to determine and study the vision of schoolchildren. Field research was conducted in six regions, namely the central, north, south-western, north-eastern, southern and south-eastern parts of the country, a total of 29 schoolchildren participated in the research. The schools that participated in the survey represent a fairly wide range: from rural schools with teaching in Kazakh language to specialised lyceums with teaching in both Russian and Kazakh languages. In addition to the geographical location, school facilities also differ from each other in terms of class size, number of students and shifts.

The questionnaire includes the following components:

1. General data (qualitative and quantitative data about the respondent).
2. Effectiveness of the 5-point evaluation system (Meichun et al., 2006).

Researchers have developed questions to examine the structure of the effectiveness of the 5-point evaluation system (e.g., the ability of the system to identify weaknesses and strengths, provide feedback, a differentiated approach in evaluation, objectivity etc.), which are scored on the 7-point Likert scale (http://www.market-journal.com).

The proposal to participate in the sociological survey was sent to more than 40 different school-based organisations in the Kazakhstan regions. During the coordination process, the number of institutions that confirmed participation decreased to 31, with a total of 965 students in upper grades. At the same time, only 29 schools were actually involved in the survey, bringing the sample to 876 respondents. The remaining two schools were forced to give up due to the busy UNT preparation. Furthermore, there were 18 students from different schools who refused to participate, and the total number of respondents was 858. The anonymity principle is considered necessary for gathering objective and reliable information, which did not contain a bias in the desire to respond with the 'right and desirable' statements. The advantage of the Likert scale in the survey methodology was the flexibility and

possibility of independent determination of the measuring diapason. Contrary to the Yes or No answers, the Likert scale allows us to examine attitudes or opinions in the range of polar maxima and to determine the degree of judgment (Table 3).

The survey showed the following information (Table 4). The sample by sex and age is represented in a sufficiently normally distributed proportion. 73.5% of surveyed pupils have completed their studies this year. At the same time, one-third of the respondents noted their academic performance at the level of well; the second dominant group (23.4%) was represented by the respondents who assessed themselves in the category 'between average and well. The other two categories of students, 'good' and 'between good and excellent', make up the second third of the respondents (28.1%). The proportion of high school students (97%) who plan to continue their studies in higher education institutions also remains undetected. This indicator negatively correlates with the number of students who have indicated themselves in the categories of 'low' and 'between low and average' academic performance. The factor analysis method was used for studying possible interrelationships in the structure of variables assessing the pupils' attitude to the 5-point method of assessment.

Table 3. Frequency distribution of contextual variables

Variables	Compound values	Amount	%
Gender (total – 857)	Males	398	43.4
	Females	459	53.6
Age (total – 847):	15	23	2.7
	16	219	25.9
	17	451	53.2
	18	154	18.2
Type of school (total – 805)	Comprehensive school	258	32.0
	Lyceum	249	30.9
	Gymnasium	298	37.0
Class (total – 858)	10	227	26.5
	11	631	73.5
Location (total – 854)	Village	64	7.5
	City (with a population of less than 500,000)	83	9.7
	City (with a population of over 500,000)	707	82.8
Language of instruction (general – 858)	Kazakh	327	38.1
	Russian	531	61.9
Academic performance (total – 82)	Low	6	0.7
	Between low and medium	24	2.8
	Average	118	13.8
	Between medium and good	199	23.4
	Good	266	31.2
	Between good and great	153	18.0
	Great	86	10.1
Intention to get higher education (general – 854)	Yes	828	97.0
	No	5	0.6
	I do not know/not sure	21	2.5

The factor structure evaluates descriptors as the most common approach for identifying the underlying factors that determine and/or shape the structure of a reaction or a qualitative attitude to something. It is also popular in that it often reduces a large number of variables to contextually and logically interrelated components. A total of nine variables aimed at studying the perceptions of students in the 5-point system and presented below were considered in the factor analysis. The objective of the factor analysis is to examine the structure of the data characterising the general attitude

of students towards a 5-point system and to highlight their contextual relationship, using the Varimax method (Velicer, 1990) (Table 4).

Table 4. Factor analysis

Question approval in the questionnaire	Variable
The existing 5-point system evaluates my understanding and application of the material covered in practice.	Assessing the understanding and application of the material learned in practice
5-point system reflects my analytical skills and critical thinking	Reflection of analytical skills and critical thinking
A 5-point assessment reveals my strengths and weaknesses.	Identify strengths and weaknesses
A 5-point assessment shows what skills I should develop to improve my level.	Skills development
I want to get a more detailed assessment showing my strengths and weaknesses	Receiving a detailed assessment
I want the score to show my learning progress	Learning progress
I would like the assessment to show my individual development, and not my level of knowledge in comparison with other students.	The individual development reflection
The existing 5-point system takes into account my individual learning abilities.	Accounting for individual abilities
I am satisfied with the existing 5-point grading system and there is no need to change anything.	Satisfaction with the assessment system

Two main factors were identified to explain 63% of the total divergence in the model. Factor 1 with the following six components positively related to each other characterises the functional assessment of learning achievement in the process:

- Reflection of analytical ability and critical thinking;
- Identification of strengths and weaknesses;
- Satisfaction with the evaluation system;
- Evaluation of the understanding and practical implementation of the material covered in the course;
- Development of skills and abilities;
- It takes into account individual abilities (Table 5);
- Factor 2 – feedback – combining components such as
- Receiving a comprehensive assessment;
- The progress in learning;
- The reflection of individual development could be described as feedback.

The analysis of the survey showed that the majority of respondents (26.0% + 44.4%) agreed that the existing 5-point system of grading determines the assimilation, understanding and, most importantly, practical implementation of studied material. However, the question about the ability of the traditional system to capture the analytical skills or identify the specific weaknesses/strengths of students describes the reversal. More than half of students (58.7%) on average do not agree or fully disagree with the above-mentioned characteristics of the current grading mechanism. The students shared the same perception of the system regarding the missing individual approach in evaluation. We can assume that this fact in general leads to a lower apprehension of the evaluation system from the students' standpoint. The following question appears from the analysis: What does it mean to use knowledge in real life and what result does the student are expected to achieve to confirm these abilities?

Table 5. Frequency distribution components first factor in %

Categories	Assessing the understanding and application of the material	Reflection of analytical skills and critical thinking	Identify strengths and weaknesses	Skills development	Accounting for individual characteristics	Satisfaction with the assessment system
I completely agree	26.0	0.4	0.5	0.1	1.0	0.7
I agree	44.4	14.2	14.8	14.0	16.0	15.8
Rather agree than disagree	13.4	8.8	11.1	10.7	13.3	8.8
I do not know/not sure/a	0.8	0.7	0.6	0.8	0.6	1.1
Rather disagree than agree	6.0	14.0	17.0	16.3	16.9	19.1
I do not agree	9.3	14.4	38.4	40.0	37.3	31.4
Totally disagree	0.1	20.6	17.6	18.1	14.9	23.1

According to Jadrina (2012), the knowledge and skills acquired in the process of studying subjects remain in the definition of an 'educational result' today. The content of the academic education is based on the subject basis inherited from the Soviet system of educational process organisation. Reflecting on this, the author concludes that academic subject knowledge and skills do not correspond to modern educational objectives, where the main focus is on 'how can we teach a schoolchild to learn', rather than the traditional theory of 'what can we learn? Almurzaeva et al. (2017) considered the modernising processes of the reflexive evaluation aspect in the entire educational process. Thus, in their opinion, the 5-point scale does not provide opportunities for accounting and displaying personal traits. It lacks a clear criterion and substantive criterion of evaluation norms. This leads in real school practice to the bias of marking depending on the teacher's position.

9. Discussion

A review of Kazakhstan's education system based on the identified key indicators revealed a qualitative overview of its reform and modernisation. The data obtained demonstrate that the main criterion indicators – socio-economic status, unequal demographic density, educational conditions and environment, quality and efficiency, scientific and methodological renewals – reflect the positive dynamics. Obviously, all the innovations covered are followed by a great part of criticism from all levels of Kazakhstan and world community. The changes implemented, however, at the same time the process of their transformation; adaptation to existing standards and consumer requirements takes place. The participation of Kazakhstan's schoolchildren in international research – PISA and TIMS, the compliance and transformation of the final certification tests in accordance with international standards, the strengthening of the profile of schools, psychological and consulting support – has a positive impact as well.

These key indicators focus the Kazakh people's attention on the quality indicators and efficiency of educational organisations. While evaluation mechanisms vary tremendously, the challenges for the country remain in providing high quality data, increasing transparency and ensuring that the collected data support teaching. Kazakhstan has extensive central planning, but low autonomy at the regional and school levels can limit the ability of schools to respond to local needs. The fact that, since 2007, school boards of trustees have been established at the school level, providing opportunities for greater transparency and improved record-keeping practices, yet the problem is still open. Councils of Trustees, which include parents, community organisations and local authorities, all have important functions (e.g., participation in the development of school development strategies, appointment of key staff and supervision of school finances). Thus, according to OECD data for 2015, only half of the schools had

established school boards of trustees, but in practice their mandate and role remains uncertain. Generally, their ongoing work at the time was assisting in the organisation of sociocultural events, such as parent committees.

The best situation can be observed in this direction among higher education institutions of Kazakhstan, as, starting from 2007, corporate governance bodies (also known as boards of trustees, supervisory boards or boards of directors) were established to support higher education institutions. Currently, they are responsible for the distribution of sponsorship, charitable assistance and funds as well as for participation in the competition for the nomination of the university rectors. Between 2016 and 2018, a total number of 19 rectors of state universities were elected by the supervisory board on the basis of a competitive selection process.

We cannot ignore a new legislative initiative – the law 'On the Status of the Educator of the Republic of Kazakhstan', which is scheduled for approval by the government authorities in June 2019. We consider that this law will be a great motivation for a teacher to make a decision to engage in innovative activities, research, introduce modern teaching methods recommended by the Ministry, change him and upgrade the qualification and academic level.

The results of the sociological survey conducted by Nazarbayev University staff on the issue of changing the evaluation system may seem unsurprising and even predictable, that interested parties, and in this case students, will prefer to 'shift responsibility' for their results to the 'weaknesses' of the existing evaluation system. On the other hand, the objective of this study was not to take into account the rationale for the criterion-based assessment methodology, rather the consideration of the traditional system of assessment through the prism of new requirements set by the new goals of school education. The data on the perception of the 5-point evaluation mechanism by pupils' eyes definitely gives the system a new role that could contribute to their development. And an interesting fact in this study is not even the indicators that represent the prospects of the majority of respondents, but the structure of the identified factors, as it seems to the working group.

The thematic choice of this article is not a random one, but a statistical and constant one. Starting from 2014, the authors inform about the reforms of Kazakhstan's education system by publishing articles on current trends:

- Improvement of the educational process in rural schools;
- Functioning of district resource centres;
- Monitoring and evaluation in Kazakhstan: new benchmarks;
- Evaluation system in the Kazakhstan higher education institution;
- Comparative education: Kazakhstan and Italy.

In the future, it has planned to publish a publication on comparative education in Kazakhstan and Serbia, as well as on the functioning of the dual system of education in Kazakhstan in comparison with other countries of the world.

10. Conclusion

The research presented in this publication confirms the notorious fact that the importance of the interrelated nature of all components – programme content, teaching methods and evaluation mechanisms – has frequently been raised (Jadrina & Kurakbaev, 2014). It is clear that the main idea of the presented data was not a complete change of the entire school education in Kazakhstan. The existing education system has plenty of basics and elements that, in integration with innovations in the educational process, can improve the quality of education and establish the basis for its further development.

According to statistics, the national average school enrolment rate in 2017 was 76.4% (the total secondary school enrolment rate was 99.85%). The OECD report notes that there is still much to be

done to eliminate persistent inequalities in access and improve school achievement. Also, PISA data showed that Kazakhstan's secondary education was more effective in teaching theoretical knowledge than teaching advanced skills. The current shift to a competency-based approach with a focus on science, technology, engineering and mathematics is positive (www.oecd.org/education/policy-outlook). The robotics club activities start from primary school years. This all testifies to how Kazakhstan's education and science passes through its thorny path, developing, making mistakes and changing, but independently forming its educational policy and individual status.

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