
ANNUAL REPORT

NAZARBAYEV INTELLECTUAL SCHOOLS
Autonomous educational organisation

2019

PART 2

NIS EXPERIENCE DISSEMINATION



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ABBREVIATIONS

NIS	Nazarbayev Intellectual Schools Autonomous Educational Organisation
HEI	Higher educational institution
SCES	State Compulsory Education Standard
IAC	Information Analysis Centre
MES	Ministry of Education and Science of Kazakhstan
MD	Ministry of Defence of Kazakhstan
NAE	Y. Altynsarin National Academy of Education
Orleu	Orleu National Centre for Professional Development
NTC	National Testing Centre
RPhMS	Republican Physics and Mathematics school in Almaty and Nur-Sultan
DER	Digital educational resources
CEP	Centre for Educational Programmes
CPM	Centre for Pedagogical Measurements
CoE	Centre of Excellence

Note

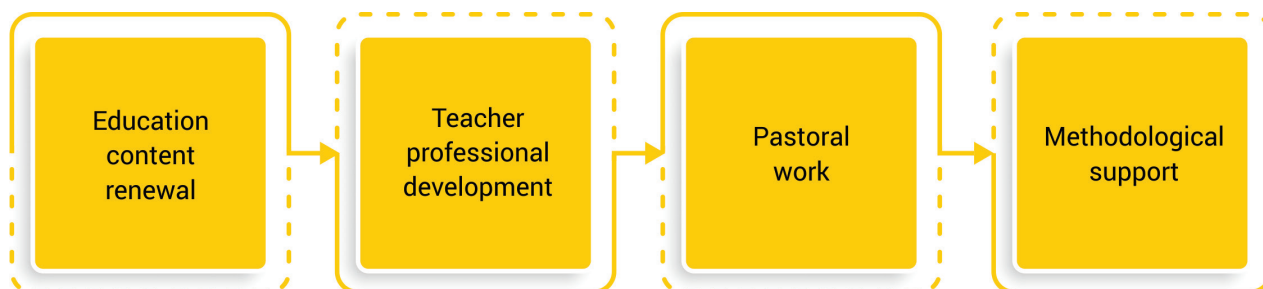
EKR	East Kazakhstan Region
WKR	West Kazakhstan Region
NKR	North Kazakhstan Region
SKR	South Kazakhstan Region
Aktau	Mangystau Region (regional centre)
Kokshetau	Akmola Region (regional centre)
Taraz	Zhambyl Region (regional centre)
Uralsk	West Kazakhstan Region (regional centre)
Ust-Kamenogorsk	East Kazakhstan Region (regional centre)
Shymkent	South Kazakhstan Region (regional centre)
Petropavlovsk	North Kazakhstan Region (regional centre)
Taldykorgan	Almaty Region (regional centre)



INTRODUCTION

Experience dissemination to the national education system is one of the key strands for Nazarbayev Intellectual Schools Autonomous Education Organization.

The introduction of the new model of education through dissemination of best practices is a large-scale, multidimensional process involving all structures and links of the education system, which is implemented in an integrated manner in several strategic areas of the country.



Education must not simply focus on bringing young people into the labour market; it must equip students with the skills they need to become active, responsible, patriotic and engaged citizens.

To be ready for the future, people must learn to think and act in a more comprehensive way, taking into account the interrelationships and relationships between conflicting or incompatible ideas, logic and positions, both in the short and long term.

Any successful transformation requires a change in the consciousness of both the participants in the educational process and society as a whole. This, in turn, requires further work on the renewal of education content on a systemic basis in order to ensure solidity of educational policies and continuity of results.

OECD predicts that by 2030 education will not only depend on future trends and needs, but also on societal aspirations, in other words human behaviour will be governed by a global vision of change (<https://www.oecd.org/education/2030-project/>).

Main results of NIS experience dissemination

- Introduction of the renewed education content in Grades 1-10 of mainstream schools.
- Completed piloting of renewed primary school content in 30 pilot schools. The effectiveness of primary school standard piloting is confirmed by the results of a 4-year diagnostic study.
- Since 2017, NIS schools in all regions of the country have been successfully functioning as Methodological Centres to support the education content renewal and teacher professional development. In 2019, NIS schools organised and conducted 8,457 methodological and practical training events. The leading schools became agents of change in the regions, leaders in creating professional teacher communities and providing methodological support to teachers of other mainstream schools in the region. The aspiration of mainstream teachers to apply advanced techniques and technologies, readiness for leadership in experience exchange created a positive tendency in increasing the network of **Leading schools from 765 in 2018 to 1020 schools in 2019**.
- NIS continues to provide mainstream schools teachers with access to educational resources on the ERP (www.smk.edu.kz). As of the end of 2019 more than 148 thousand methodical guides were uploaded, 318.5 thousand teachers registered and more than 45.5 million downloads were made. 4.5 thousand teachers received advice and methodological support on various issues through Discussion Platform.

- NIS implemented "Modernisation of education content and organisation of the educational process at the State Teacher Training College named after Zh. Dosmukhamedov" in Uralsk, West Kazakhstan Region, aimed at transforming the teacher training programme.

- Dissemination of NIS experience has successfully stepped outside of Kazakhstan. EdCrunch forum, Moscow, one of the largest education conferences in Europe, hosted a master class: An Individual Approach: How to Involve Each Student in Effective Learning.

- A project to improve the qualifications of teachers in certain regions has been launched in Khanty-Mansi Autonomous Region - Yugra, Barnaul, Togliatti, Moscow, Samara and Omsk. Within the framework of the Republican August Meetings of Educators, NIS teachers and CoE trainers delivered sessions in regional methodical centres on 19 subjects in Kazakh and Russian. 30.6 thousand teachers attended 2,046 master classes were focused on:

- programmes on the renewed content of education;
- criteria-based assessment system;
- modern methods and approaches to teaching students.

For the first time, NIS International Research-to-Practice Conference was held jointly with the Nur-Sultan city authorities. The theme of the eleventh conference was Teachers Changing the World of Schooling. The conference was attended by more than 2,400 participants from 17 countries.





EDUCATION CONTENT DEVELOPMENT

The renewed content of education is a fundamentally new approach in Kazakhstan practice, as it is focused on changing the educational paradigm – knowledge transfer is now replaced by developing student's personality through learning actions and their independent application in new situations.

The main thing is not the amount of knowledge and rote memorisation of individual facts, but a deep understanding and real learning outcomes, in other words the ability of students to apply the acquired knowledge to solve real life problems.

The renewed content of education sets out long-term expected learning outcomes in the form of transferrable skills: the ability to apply knowledge, think critically and consciously, learn, communicate in any community, to master information and communication technologies (ICT) and research skills, to work in teams and to solve problems and issues on their own. Classification and systematisation of expected results in educational areas by levels of thinking skills: knows, understands, applies, analyses, synthesises, evaluates – provide unity of research, cognitive, practical and emotional-aesthetic ways of world cognition.

When developing the renewed content of education, value-oriented and system-activity approaches are used. The value-oriented approach focuses the organisation of the education and pastoral work focuses on the formation of national identity based on the consolidating national idea of Mangilik Yel.

The following values were defined as part of educational standards: Kazakhstani patriotism and civic responsibility, respect, cooperation, openness, labour and creativity, lifelong learning. Values are instilled both through the subject content and extracurricular activities. Thus, the educational process is integrated into the learning process.

The definition of the content of education, development of learning objectives, organisation of the educational process, and assessment of students' learning

achievements build based on activity-based approach. This approach is aimed at involving students in the process of learning, activating thinking processes and developing students' independent acquisition of knowledge and practical skills. The activity-based approach is implemented in the process of students' learning, project and research activities.

The process of renewing the education content is based on:

- The plan for transition to 12-year education until 2027 ;
- NIS action plan on disseminating experience within education content renewal until 2020 .

NIS has developed and submitted to MES the **SCES projects** for primary, secondary and high schools, **163** secondary education subject programmes, **364** medium-term plans and **93** teacher guides on implementing the subject programmes for 1-11 Grades, **157** student books and textbooks in Kazakh and Russian.

The subject programmes are based on spiral principle, which implies each learning objective and theme is revisited with gradual extension, complication and increasing of knowledge and skills.

An integrative approach has also been used in the development of secondary education content to ensure moving from subject-specific concepts to general scientific categories.

As a result of using this approach, students learn to integrate knowledge and apply it to solve a specific technological problem, learn to operate with common terminology and concepts. This leads to the development of conceptual knowledge about the basics of science and the functionality of the knowledge and skills acquired.

Primary school integration is implemented through age-appropriate cross-curricular themes. The content of all subjects is used to explore different aspects of cross-curricular themes that are relevant to the development of student personality. Cross-curricular themes depend on the objectives and content of the subject to be taught.

¹ Order of the MES of Kazakhstan, No. 358 dated 21 August, 2014.

² Решение Decision of NIS Board, 2014.

The communicative approach, underlying language teaching, promotes the development of students' reading literacy, the ability to use the language functionally in different real-life situations. This approach ensures the development of 4 language skills: listening, speaking, reading and writing.

A new standard for primary education implies the development of background knowledge about human being, nature and society, the development of functional skills of calculating, reading, writing, expressing thoughts logically, and inferring cause-and-effect relationships. This means that when solving problems, students should answer not only the question "What to learn?" but also the questions "Why to learn?", "How to learn?".

The summary of changes, typical for the new SCES, determines its innovativeness, compliance with modern ideas about the educational process and the demands of students, parents, society and the state.

The content of primary school subject programmes is closely linked to real life and

focused on practice. It promotes observation skills and curiosity, ability to work with information and express one's point of view; develops functional literacy.

New realities and challenges have led to the necessity to renew the content of secondary education, which will allow school graduates in Kazakhstan to be competitive in education and further employment.

To solve this task, since 2016 all mainstream schools in the country have been gradually introducing the renewed programmes of primary, basic secondary and general secondary education. This programme was developed by NIS in cooperation with scientists of the Y. Altynsarin National Academy of Education, leading pedagogical institutions of Kazakhstan and teachers - practitioners from mainstream schools. In 2019-2020 academic year, the renewed programmes were introduced in Grades 4, 9 and 10.

The renewed education content was piloted according to the approved schedule (Figure 1).

IMPLEMENTATION SCHEDULE OF THE RENEWED CONTENT OF EDUCATION

Academic year	Grade										
	1	2	3	4	5	6	7	8	9	10	11
2015-2016	A										
2016-2017	B	A									
2017-2018	B	B	A		B		B				
2018-2019	B	B	B	A	B	B	B	B			
2019-2020	B	B	B	B	B	B	B	B	B	B	
2020-2021	B	B	B	B	B	B	B	B	B	B	B
2021-2022	B	B	B	B	B	B	B	B	B	B	B

A
Piloting

B
Introduction

Considering piloting results, NIS revised the programme content, learning objectives (LOs) for all Grades and subjects, logical sequence of units, and strengthened the intra-curricular integration.

As a result of the revision, the following changes were introduced:

- Kazakh Language - 10 LOs reworded, 1 LO added;
- Russian Language - 8 LOs reworded, 5 LOs changed;
- Literary reading (in Kazakh) – 2 LOs changed;
- Literary reading (in Russian) – 8 LOs reworded, 2 LOs changed;
- English Language - 6 LOs reworded;
- Mathematics - 9 LOs specified, 2 LOs added, 1 LO removed;
- Science - 8 LOs reworded, 9 LOs moved from one Grade to another, 1 LO removed;
- World Understanding - 7 LOs reworded.

The renewed programmes focus on developing students' skills: apply the knowledge in practice, think critically, communicate in various situations, ICT and research skills, work in teams and individually.

Medium-term plans have been developed for all subject programmes, and include:

- recommended classroom learning activities;
- methods and techniques of organising the learning process to achieve learning objectives;
- pedagogy that investigates interdisciplinary processes and phenomena occurring in real life and describe the results;
- references to modern educational literature, online resources; a sample lesson plan.

The introduction of the renewed programmes into the learning process was preceded by a wide discussion within the country's educational community.

As a result of the discussion, according to the orders of the Minister of Education and Science of Kazakhstan No. 576 dated 17 October, 2018, No. 105 dated 7 March, 2019, secondary and high school programmes for Chemistry and ICT were revised. In this regard, NIS revised 6 medium-term plans for Grades 9, 10, 11 (science and mathematics, arts and humanities) on these subjects.



According to the results of piloting of the subject programmes for Grade 4 in 2018-2019 in 30 pilot schools, 14 medium-term plans were revised. In order to extend knowledge within individual learning objectives, methodological recommendations on the effective use of active learning strategies and techniques, various activities, assessment criteria and descriptors were included in the medium-term plans, within the framework of the activity-based approach.

The results of the 4 year diagnostic testing and monitoring study allow us to draw the following conclusion - the expected learning outcomes of the renewed programmes are achievable and consider the age characteristics of primary students.

In the future, NIS plans to work on improving the efficiency of the implemented subject programmes in the following areas:

1. Development of didactic teaching aids to assist and support the teacher.

2. Development of video lessons to explain the learning objectives with their further uploading to the Educational Resource Portal;

3. Organisation of master classes during the August Pedagogical Meetings, etc.

The introduction of the renewed education content contributes to the creation of a single educational space conducive to the harmonious formation and intellectual development of an

individual, combining national and universal values, functional literacy and competitiveness in a changing environment.

In order to achieve identified goals of creating own innovative and contemporary system of education, NIS initiates gradual transition to a 12-year model of secondary education.

NIS is preparing to transform primary education into a 5-year model, considering the

further introduction of the Latin script into the education system of Kazakhstan. During the reporting period, NIS developed **55** medium-term plans for Grades 2-5.

Medium-term plans are revised according to the schedule for piloting and implementation of subject programmes. Analysis of the diagnostic test results shows that the following themes are the most challenging for students:

- Kazakh Language - 'Lexical Meaning of Words', 'Use of Grammar Norms';
- Russian Language - 'Definition of text types and genres', 'Understanding the role of lexical and syntactic units in a text', 'Compliance with grammar and spelling norms';
- Mathematics - 'Geometric figures and their classification', 'Problems and mathematical model';
- Science - 'Animals', 'Air', 'Natural resources'.

It was challenging for teachers to develop students' skills of applied problem solving, classifying and systematising information, and solving integrated problems.

To help teachers, programme developers have created teaching aids and video lectures that explain how to achieve the most challenging learning objectives. A total of 25 primary school guides and 96 videos on approaches and techniques to achieve learning objectives have been developed.

In 2016, NIS developed Educational Resource Portal (www.smk.edu.kz), providing feedback from pilot school teachers and methodological support to mainstream school teachers.

High demand for such support among teachers is reflected in the ever-increasing number of visits and downloads (over 35 million).

INTRODUCTION OF THE CRITERIA-BASED ASSESSMENT SYSTEM WITHIN NIS EXPERIENCE DISSEMINATION.

In 2019, the system of criteria-based assessment was introduced in Grades 4, 9 and 10 of mainstream schools in accordance with the schedule of transition to the renewed content of education.



The following has been done to provide

effective methodological support to mainstream school teachers in implementing the criteria-based assessment:

- **71 503** criteria-based assessment tools developed;
- **1 031** teaching aids prepared;
- Online course provided for teachers;
- **75** training workshops and training sessions delivered;
- **8 784** mainstream school teachers and regional coordinators, and **1 192** trainers trained.
- In addition, NIS developed videos and information booklets, delivered webinars, round tables, meetings with teachers on assessment issues, conducted moderation of the teachers', school and regional coordinators' forum at the discussion platform of the Educational Resource Portal.

NIS provided recommendations on formative and summative assessment for mainstream school teachers, and developed specifications for summative assessment for Grades 1 to 10 in Kazakh, Russian and English, including:



- 110 collections of formative assessment tasks for different subjects of Grades 4, 9, and 10;
- 92 summative assessment aids for different subjects of Grades 4, 9, 10;
- 77 summative assessment specifications for different subjects of Grades 9 and 10;
- 57 additional summative assessment specifications for the academic year of Grades 3, 6, 8 (for students with 'unsatisfactory' yearly grade);
- 8 collections of formative assessment tasks for Chemistry, Physics, Biology, Computer Science of Grades 10 and 11 in English;
- 8 summative assessment aids for Chemistry, Physics, Biology, Computer Science of Grades 10 and 11 in English;
- 8 summative assessment specifications for Chemistry, Physics, Biology, Computer Science of Grades 10 and 11 in English.

To ensure the effective implementation of the criteria-based assessment system in

the 2020-2021 academic year, NIS developed 64 collections of formative assessment tasks, 58 summative assessment aids and 58 summative assessment specifications for Grade 11 of mainstream schools.

In 2019, NIS delivered more than 10 workshops, training courses, webinars, master classes and advanced training courses for 1,917 school and regional coordinators to support the implementation of the criteria-based assessment system.



Within the framework of memoranda on cooperation between NIS and educational organisations, NIS provided workshops and master classes on the criteria-based assessment system for:

- 1200 teachers and 120 school coordinators of the East Kazakhstan region (Ust-Kamenogorsk, Semey);
- 79 teachers of RPMS in Nur-Sultan and Almaty and Kazakh National Academy of Choreography of Nur-Sultan;

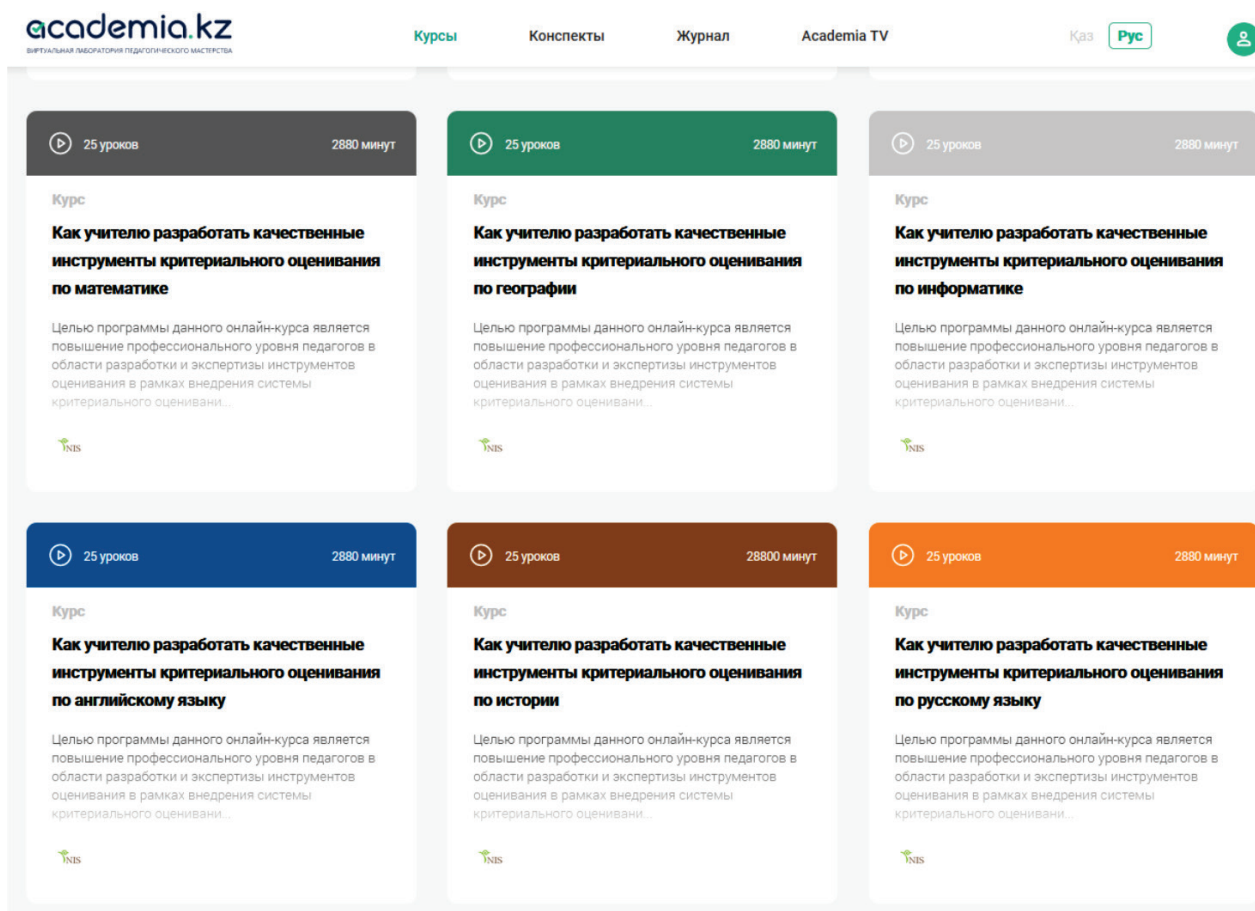
- 203 teachers, Directors and Deputy Directors of 30 pilot schools;
- 315 employees of Orleu.



NIS continued to provide methodological support and consult teachers and school coordinators through ERP. The discussion platform of the ERP continuously moderates teacher forums for specific subjects.

To support teachers, NIS started an online course at academia.kz on "How a teacher can develop quality tools for criteria-based assessment", which was developed with the use of virtual laboratory of pedagogical excellence. The online course provides an opportunity to acquire valuable skills in developing assessment tools for the successful implementation of criteria-based assessment.





In 2019-2020 academic year, Grade 9 students studying according to the renewed content of education will undergo the final assessment for the first time. In order to ensure continuity of education system, the format and content of the final Grade 9 assessment has been revised in accordance with the expected results of the renewed SCES. The revised final assessment form includes multi-

level assessment tasks for high-order skills (analysis, synthesis, assessment), language skills and functional literacy. In order to successfully implement the final assessment in the 2019-2020 academic year, NIS developed 21 specifications with sample tasks and Instructions for the final assessment of Grade 9 students in mainstream schools.



EDUCATIONAL RESOURCES

2.1

Textbooks

2.2

Educational
Resource
Portal

2.3

Libraries

2.4

Publications

2.1. TEXTBOOKS

Grade 4 textbook development

Within the renewed content of education, NIS developed Grade 4 textbooks of Mathematics, Science, World Understanding in Kazakh and Russian. Grade 4 textbooks stand out for its research skills development, new critical thinking features, consolidation and reflection tasks.

The textbooks fulfilled all the conditions of Uchebnik Republican Research-to-Practice Centre of MES. Textbooks were highly appreciated by 30 pilot schools and received positive feedback at the website of public evaluation conducted by the Ministry of Education and Science of Kazakhstan.

The textbook for Science in Kazakh and Russian were included in the List of textbooks recommended by MES, as basic textbooks to be used in general educational institutions and were translated into Uzbek and Uighur.

To motivate students, NIS integrated digital educational resources and used innovative technologies of augmented reality (AR). This technology enables the creation of an active educational environment, to make the process of learning engaging and accessible through 3D object modelling, theory visualisation, sounding of rare natural processes and phenomena.

Science textbook developed by NIS for Grade 3 of mainstream schools was first 'digital' one. Textbook for Grade 4 has a virtual component in the form of digital educational resources and AR NIS project. AR technology complements the hard copy of the textbook with digital content in real time using computer devices (tablets, smartphones, and other gadgets) and software for them. AR NIS for Grade 4 contains a total of 55 interactive features (7 - 3D, 47 video, 1 audio), which are available at Google Play and AppStore free of charge.

The textbooks use video and photo materials from 15 individuals and legal entities, in particular Aerospace Committee of the Ministry of Digital Development, Innovation and Aerospace Industry of Kazakhstan, JSC NC Astana EXPO-2017 (since February 18, 2020 renamed to QazExpoCongress National Company). LLP SaryarkaAvtoProm, JSC Agromash Holding KZ, LLP KAZ Minerals Management.



AR NIS won the **1st place in the special category 'Technologies for Children!'** at EdCrunch Award, initiated by the International Conference on New Educational Technologies EdCrunch.

The jury board assessed it as follows:

"AR NIS is a very good and useful product for primary school students. It is good to use such products to practice skills on models without risking health and expensive equipment. It's an interesting solution to involve younger students in the educational process".

Experimental Site project

NIS and Balapan TV channel initiated Experimental Site project. The project aims at popularising science among school and pre-school children.

25 experiments described in the Science subject programme and textbook were

filmed within Experimental Site project. Video recording took place at the premises of Nur-Sultan International School with the participation of Aruzhan Maksatkyzy, a Grade 5A student, and Ayzhan Mambetova, a chemistry teacher.

The videos are broadcasted at Balapan TV channel Monday to Friday, and available at the official YouTube channel.



20 sets of textbooks for Grade 1, 2, 3, 4, 5, 7 in Mathematics, Science, World Understanding, History of Kazakhstan, World History, Arts and Crafts for boys, Arts and Crafts for girls in Kazakh and Russian, Russian Language developed by NIS, were included in the **List of textbooks, teaching aids and other additional literature, including electronic versions**, recommended by MES to be used in mainstream schools.

NIS developed **96 textbooks, 400 titles in total**.

Textbooks that are not included in the List are sold through NIS online store (<http://store.nis.edu.kz/>) and used by teachers as additional teaching resources.

Teaching aids

During the reporting period, NIS developed and published 18 titles of additional literature (collections of tasks, teaching aids) for science and humanities. NIS developed teaching aids

for primary and secondary school teachers and collection of tasks for secondary school teachers. Additional literature is available at NIS online store.



17 collections of short-term plans for World Understanding (Kazakh), World Understanding (Russian), Literary Reading (Kazakh), Literary

Reading (Russian), History of Kazakhstan (Kazakh), Chemistry (Russian), ICT (Russian), Kazakh Language, Kazakh Language and Literature, Russian Language, Arts and Crafts (Kazakh), Arts and Crafts (Russian) are also available at NIS online store.

KazLingua app

Centre for Educational Programmes continues developing KazLingua application.

KazLingua is a tool that allows you to effectively learn Kazakh in classes with the Russian language of instruction. The application is based on a frequency dictionary, in other words frequently used words and word combinations for each theme with regard appropriateness. This helps students memorise and use words, word combinations and whole sentences. KazLingua application is also intended for independent learning of Kazakh. It meets all norms and requirements of the SCES. The content was developed by specialists from Centre for Educational Programmes in cooperation with specialists of A.

Baitursynov Linguistics Institute. KazLingua for Grade 5 is available on Android, iOS, web and ERP.

2.2. EDUCATIONAL RESOURCE PORTAL

ERP at www.smk.edu.kz is an online platform created by NIS in August 2016 to provide methodological support to Kazakhstani teachers within the implementation of renewed content of secondary education.

Content for all grades is uploaded to the ERP as the renewed education content is gradually introduced.

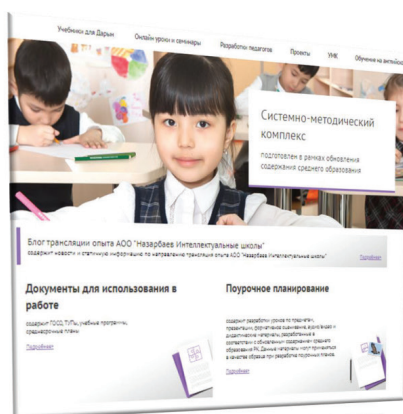
Thus, as of the end of 2019, more than 160 thousand materials on Lesson Planning, Criteria-Based Assessment, Textbooks, etc for Grades 1-10 have been uploaded within the renewed content of secondary education.

At the beginning of the academic year, more than 55 000 materials on teaching in Grades 4, 9, 10 were prepared and uploaded.

Within the new academic year, NIS plans to develop educational materials for Grade 11 in Science and Maths and Arts and Humanities subjects of mainstream schools.

ERP actively operates a discussion platform that allows educators to exchange experience, discuss ideas and receive support from specialists on assessment issues, pedagogy, subject programmes, educational process management.

ERP registered over 326 thousand mainstream school teachers, over 49.0 million downloads, over 37.7 million views, which is a high indicator of user activity.



Materials developed:

160 007

641 videos

developed according to the renewed subject programmes



Publications, MCPs, SCES, plans

1 819



Lessons plans

150 982



Criteria-based assessment

1 287



Textbooks, electronic textbooks

280



Teaching in English (methodological support of teachers for teaching subject content in English)

2 007



Digital Educational Resources

812



Materials developed by course participants

985



Teacher guidelines

567



Online lessons, webinars

445



Experimental project (for Zh. Dosmukhamedov college)

770



NIS Textbooks for Republican Science-to-Practice Centre "Daryn"

21



International research projects

32



Teachers registered

326 735 (PK)/



Visits

13 110 733 (PK)/



Materials downloaded

49 672 659 (PK)/



Materials reviewed

12 536 187 (PK)/



Posts on the discussions platform

4 549 (PK)/

№	Region	Number of users
1	Akmola Region	19 330
2	Aktobe Region	17 973
3	Almaty Region	41 230
4	Almaty	20 553
5	Nur-Sultan (Astana)	9 632
6	Atyrau Region	12 945
7	East Kazakhstan Region	22 474
8	Zhambyl Region	25 091
9	West Kazakhstan Region	15 515
10	Karaganda Region	21 479
11	Kostanay Region	16 249
12	Kyzylorda Region	17 860
13	Mangystau Region	12 485
14	Pavlodar Region	13 890
15	North Kazakhstan Region	14 042
16	Turkestan Region	34 229
17	Shymkent	11 758
TOTAL:		326 735

With the introduction of renewed education standards, some secondary schools started teaching Physics, Chemistry, Biology, and Computer Science in English in high school.

A media library of educational resources has been created to provide methodological support to teachers who teach subjects in English. The library contains subject programmes, medium-term plans, students, scientific articles, glossaries, and links to modern resources.

Selected resources will help teachers improve their level of English language proficiency and save time on lesson preparation by using ready-made task samples, texts, and explanations of new themes and concepts.

Virtual laboratories help teachers explain complex scientific phenomena and patterns clearly and easily through visualisation of real-life examples.

During the reporting period, **31 720** educational materials in English were prepared and published in the media library.

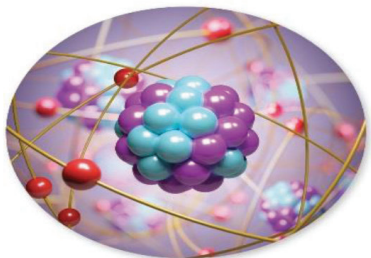
Media library in English



Biology



Chemistry



Physics



Computer Science

2.3. LIBRARIES

NIS librarians continue to disseminate their experience to mainstream schools. They conducted 50 workshops for 1 866 teachers from 1 824 mainstream schools on the following topics:

- Organising Family Reading Club with reading activities chain.
 - Planning and conducting integrated lessons together with subject teachers.
 - Spatial thinking. Developing STEM skills, Tangram game.
 - Science and poetry via Sciku.
- Organising joint work with Science and Maths teachers.

- Interactive reading for primary school students.
- Conceptual ladder as a tool for developing information literacy in integrated lessons.
- Developing critical thinking skills in library lessons.
- Analysing SOAPS texts.
- Conducting a mini-study as part of the lesson.
- Creating a Dictionary of Values to form students' values.

2.4. PUBLICATIONS

- Within the framework of memoranda with regional departments of education, universities and other educational organisations, NIS conducts systematic work on disseminating experience through information and methodological support of teachers.

- CoE provides teaching aids and resources to mainstream school teachers and pilot school teachers, methodological centres, regional and city departments of education, teachers of other educational organisations, including RPMS of Almaty and Nur-Sultan, Kazakh National Academy of Choreography.

- Information and methodological support are implemented in three areas:

- publication of Pedagogical Dialogue, information and methodological journal;

- publication of teaching literature on renewed teaching and learning practices in schools;

- articles about new strategies and effective teaching practices on educational portal (www.cpm.kz).

Pedagogical Dialogue journal

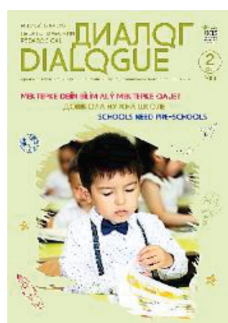
- international experience in education;
- school management;
- digital education;
- teaching methods and technologies;
- criteria-based assessment;
- education content renewal;
- action research.

Between 2012 and 2019, NIS published 30 issues of the Journal with a circulation of 60 000 copies. The journal is published 4 times a year in 2000 copies.

In 2019, NIS published **4 issues of the Journal** addressing topical issues of modern school education. Each of the four issues was dedicated to one of the following themes: "A Teacher of Our Time", "Schools need Pre-Schools", "Teachers Changing the World of Schooling", "Digital Education Today".



Issue No. 1 (27) is dedicated to the theme "**A Teacher of Our Time**". The content of the journal focuses on new approaches to improving teacher skills, integration of STEM education, predictive modelling of continuity and promotion of emotional intelligence. It presents the results of inquiry-based learning of pre-school children and considers ways of integrating issues of psychological hygiene in communication of pre-school children.



Issue No. 2 (28) is dedicated to the theme "**Schools need Pre-Schools**". The content of the journal focuses on the new approaches to improving the skills of teachers within the renewed content of pre-school education, issues of integration of STEM education and predictive modelling of learning continuity, development and promotion of emotional intelligence. It presents the results of inquiry-based learning of pre-school children and considers integrating issues of psychological hygiene in communication of pre-school children.



Issue No. 3 (29) is dedicated to the XI International Research-to-Practice Conference "**Teachers Changing the World of Schooling**". The journal contains articles by international experts, researchers and teachers of Kazakhstan on the continuous professional development of teachers, the use and impact of meta subject skills on engagement with the educational process, ways to develop the educational environment in pre-school education, and presented the results of action research.



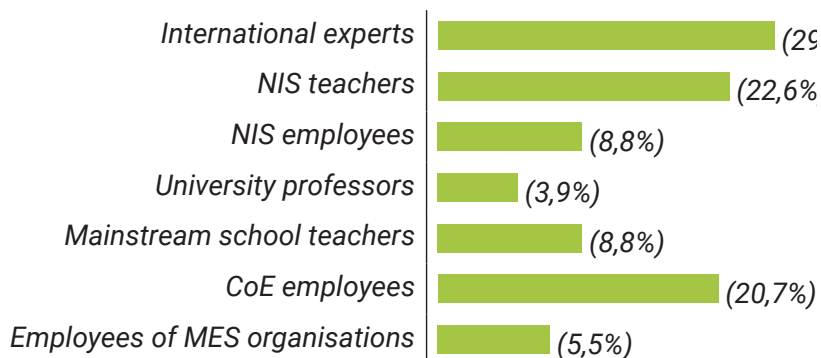
Issue No. 4 (30) is dedicated to **"Digital Education"**. The journal includes articles that reflect the domestic and international experience in implementing digital education, opportunities and prospects for online training courses for teachers, and effective ways of teacher professional development.

In the period from 2012 to 2019 **465** authors published their articles in the journal. 125 of them were international researchers, practitioners, international experts and consultants, 97 – NIS teachers, 78 – CoE employees, 38 – mainstream school teachers, 36 – NIS representatives, 18 – university

professors, 18 – representatives of educational institutions of MES (see Diagram 1).

Disseminating the experience of school education development through the journal demonstrates its integrity, continuity, positive experience, as well as addresses current problems and ways to solve them.

Diagram 1. Indicators of publication activity of authors between 2012 and 2019



In the period from 2012 to 2019, the journal published papers of educators from the following countries: Australia, Azerbaijan, Armenia, Great Britain, Israel, Indonesia,

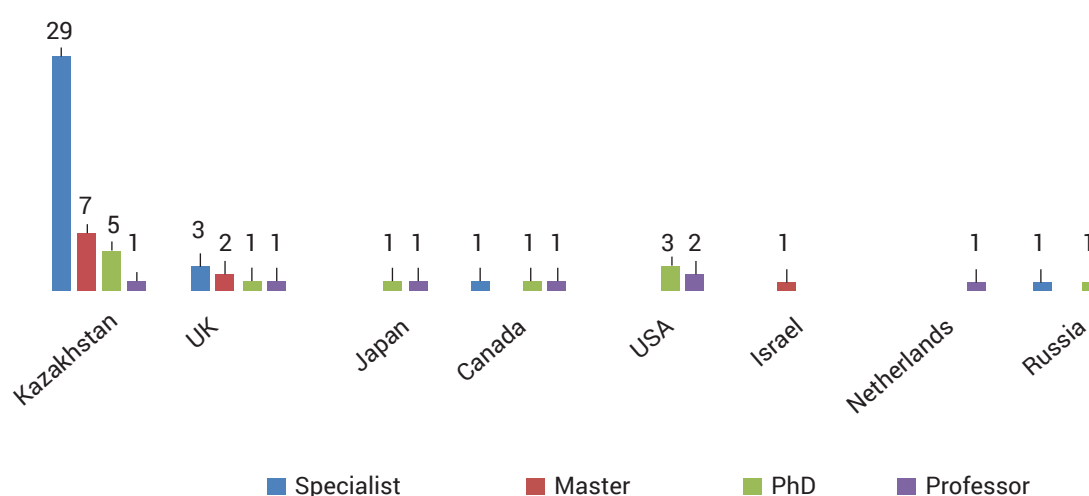
Spain, Canada, Kyrgyzstan, Malaysia, the Netherlands, New Zealand, Portugal, Russia, the United States, Finland, the South Africa, Jamaica, Japan.

Table 1. Authors of articles published in Pedagogical Dialogue journal (2019)

Countries	Specialist	Master	PhD	Professor	Total
Great Britain	3	2	1	1	7
Japan			1	1	2
Canada	1		1	1	3
USA			3	2	5

Israel		1			1
Netherlands				1	1
Russia	1		1		2
Kazakhstan	29	7	5	1	42
Total	34	10	12	7	63

Diagram 2. Authors of articles published in Pedagogical Dialogue journal (2019)



A total of 352 information-analytical, research and methodological articles have been published. Of which:

- 29.7% – articles of international researchers-practitioners, international education experts. This shows that representatives of the world education systems are highly interested in changes in Kazakhstani education practice.

- 70.3% – articles dedicated to NIS experience dissemination to the mainstream school system within the implementation of the renewed content of education. These articles address the introduction of criteria-based assessment, new methods and technologies of teaching and learning, the organisation of research and methodological post-course support.

Publication of methodological literature

In 2019, NIS published 70 titles of teaching aids (Appendix 1). A total of 423 teaching aids have been published in the period of 2012-2019.

The themes of methodological publications are very diverse and are informed by recommendations of trainers, and feedback from the participants of professional development courses delivered by CoE.

Methodological publications provide in-depth understanding of the content of educational programmes (see Table 2).



Table 2. Themes of publications

Nº n/n	Themes	Number of publications
1	For teacher	41
2	Teaching practice	16
2	For administration	2
3	For university professor	2
4	On the renewed content of education	6
5	Research	3
Total:		70

The contents of the teaching aids include:

- planning an effective lesson;
- active learning methods;
- collaborative learning;
- lesson observation and analysis;
- teacher's research practice;
- criteria-based assessment of student academic achievements.

Table 3. Publication of methodological literature by CoE offices

N	City/Region	Number of publications	N	City / Region	Number of publications
1	Nur-Sultan	10	9	Kyzylorda	3
2	Aktau	3	10	Pavlodar	3
3	Aktobe	7	11	Petropavlovsk	3
4	Almaty	4	12	Taldykorgan	5
5	Atyrau	2	13	Taraz	3
6	Karaganda	2	14	Uralsk	4
7	Kokshetau	3	15	Shymkent	6
8	Kostanay	8	16	Ust-Kamenogorsk	4
Total of 70 items					

2019 saw a quantitative increase of teaching aids published in Russian and Kazakh (36 and 31, respectively). The number of teaching aids developed in two or more languages, as well as in English, has decreased (see Table 4).

Table 4. Number of publications by language

Language	Number of publications
Kazakh	31
Russian	36
Kazakh and Russian	2
English	1
Total:	70

Methodological publications differ in their aims and objectives, and the nature of the published materials. These differences are the basis for classifying the publications by type (see Table 5).

Table 5. Number of publications by the types of methodological literature

Publication type	Number of publications
Teaching aid	46
Methodological recommendations	24
Total:	70





ADDITIONAL EDUCATION

3.1

Pastoral work

3.2

Summer school and
elective courses

3.3

Robotics

3.1. PASTORAL WORK

In 2019, as part of disseminating NIS pastoral work experience, NIS organised **208** workshops for **3 500** teachers from **1 836** city and rural mainstream schools, including the following master classes on:

- 'The Heirs of the Great Steppe' on additional education, conducting adviser hours and 'Shanyrak' hours;
- organising adviser service;
- organising student self-government bodies of NIS schools, the forum of student community leaders;
- working with parents 'World Cafe', 'Knee Wound', 'Book of Values' (information literacy, reading literacy, critical thinking development);

NIS teachers delivered practical sessions, organised exhibitions, and shared the materials from previous events.



3.2. SUMMER SCHOOL AND ELECTIVE COURSES

Every year, NIS organises elective courses for mainstream school students within Summer school.

1. The elective course in English is conducted in order to increase motivation to learn the language, deepen knowledge and improve 4 language skills: reading, speaking, writing, and listening.

The course was conducted free of charge on the basis of 17 NIS schools for **528 Grade 10 students** from socially vulnerable families.

The course programme used active learning methods – interactive lessons, interactive online games, critical thinking lessons, mini-debates, discussions, role-playing games and mini-project work.



2. With the introduction of the renewed content of education, technical creativity domain, Robotics elective course in particular, has developed significantly and gained more attention among students. NIS developed this course and trained **3 000** Computer Science teachers from mainstream schools.

IX NAURYZ MEETINGS

IX Nauryz meetings on 'Space. Science. Intellect' were dedicated to the Year of Youth and NIS 10th anniversary.

A record number of secondary school students participated in this event: 108 students from 97 mainstream schools from all over the Kazakhstan.

To immerse students in the world of cosmonautics and science, NIS organised a number of unique events:

- A meeting with astronauts, National Heroes of Kazakhstan - Toktar Aubakirov, Talgat Mussabayev and Aidyn Aiymbetov.

- A series of lectures on human space flight, astronomy and research by world experts in space exploration, the process of scientific preparation of cosmonauts for space flight, and the use of space technology for various purposes. Master classes of experts from V. Chelomey lyceum of Baikonur and NIS physics teachers on telescope assembly, space modelling and construction of a glider from scrap materials with the participation of an international guest I. Drozdovsky.

Students launched self-made rockets using launching mechanisms on the territory of NIS ChB Kyzylorda.

- Excursion to History Museum of Baikonur cosmodrome, visiting historical sites of the cosmodrome, including Buran spacecraft, S. Korolev and Yu. Gagarin memorial houses.

In addition, students visited cultural and historical sites of Kyzylorda and Kyzylorda region: Korkyt Ata memorial, Rukhani Zhangyru Centre for Humanistic Studies, IT park.



3.3. ROBOTICS

Within the experience dissemination and exchange of ideas on creating robotic systems, NIS delivered a number of events for mainstream school students and teachers:

- Professional development course on 'Training teachers to solve World Robot Olympiad problems, advanced level'

To provide NIS teachers with additional education, increase their motivation in preparing students for robotic competitions on 12-17 March, 2019, NIS conducted a course on 'Training teachers to solve World Robot Olympiad problems, advanced level' at NIS Nur-Sultan with the participation of P.V. Tomshin, the coach of the Russian Federation national team.

Course participants received training in the following areas:

- influence of physical laws on the driving dynamics of the robot;
- algorithms of the automatic control theory;

- influence of sensor placement geometry on motion controllers;
- modular programming (subroutines);
- parallel tasks;
- features of work with bi-directional motors;
- algorithms for processing noisy sensor signals;
- implicit use of sensors;
- parametric algorithms;
- state machine. Scope of tasks;
- influence of the power system on the robot's dynamics.

During the training, participants improved the following professional competencies:

1) pedagogical:

- ability to apply modern methods and technologies for organising educational activities, diagnostics and evaluation of the educational process based on various educational programmes;

2) project work:

- readiness to implement the pedagogical design of educational programmes and individual educational routes for project activities;

3) methodological:

- readiness to develop and implement methodological models, methods, technologies and teaching methods, readiness to analyse the results of the process and their use in educational organisations.

At the end of the course, 21 teachers received certificates of the professional development course completion.





• Olympiads

NIS has been the **national organiser of the World Robot Olympiad – WRO** (robotics Olympiad) in Kazakhstan since 2014.

WRO is a competition for schoolchildren and students aged 10 to 21. WRO is a

competition using the LEGO robot constructor in four different categories: Regular, Open, Student, and Football.

For the Regular category, the task is to build and develop a robot that must complete a specific task. The robot's standard dimensions are limited as follows: 25x25x25 cm.

Open category participants prepare a project on a given theme. Tasks for the Regular and Open categories change annually and, as a rule, their complexity increases.

To participate in Football, a team must prepare two autonomous robots: a striker and a goalkeeper that will compete with the opponent's robots on a special field using a special ball with infrared radiation.

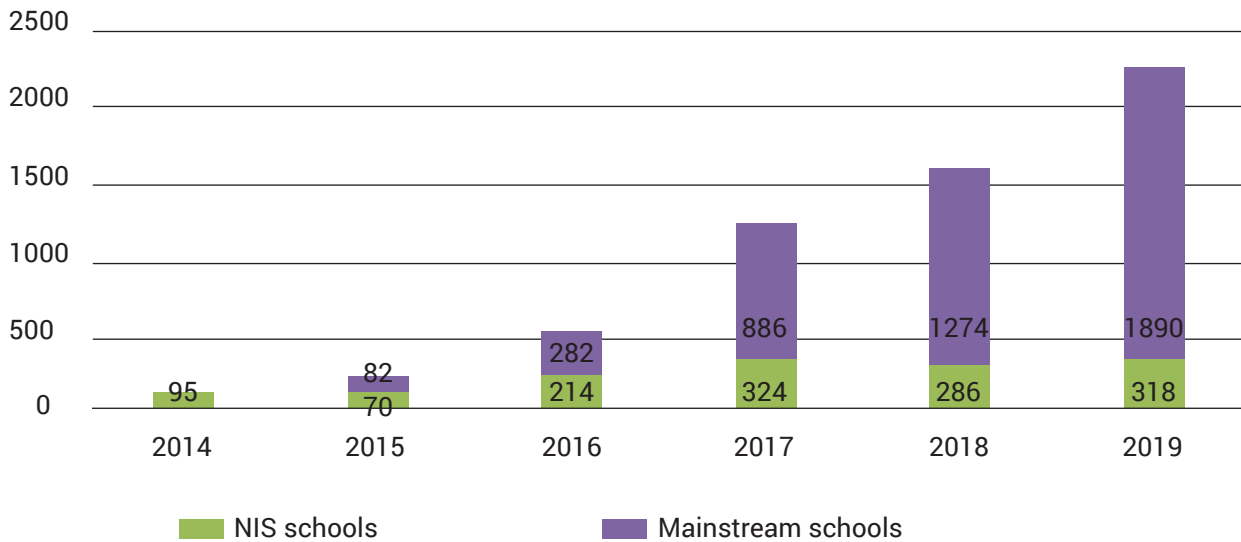
NIS conducts annual **regional and national qualifying stages** of the Olympiad in accordance with the Robotics Olympiad rules, approved by the decision of NIS Executive Board of 16 September 2015 (Protocol No. 48).

Winners of the Republican stage of the Olympiad pass to the camp stage, where Kazakhstan national team in robotics is formed to compete in the WRO international.

For 6 years of holding regional and national competitions in robotics, there has been an increase in the number of students interested in robotics:

- in 2014, there were 95 NIS students who expressed their interests;
- in 2015, there were 152 students (70 – from NIS, 82 – from mainstream schools);
- in 2016, there were 496 students (214 – from NIS, 282 – from mainstream schools);
- in 2017, there were 1-210 students (324 – from NIS, 886 – from mainstream schools);
- in 2018, there were 1-560 students (286 – from NIS, 1-274 – from mainstream schools);
- in 2019 – 2208 students (318 – from NIS, 1-890 – from mainstream schools).

The number of WRO participants



Regional stage of the robotics Olympiad

On 27 April, 2019, NIS organised regional competitions at NIS schools under the theme 'Smart city'.

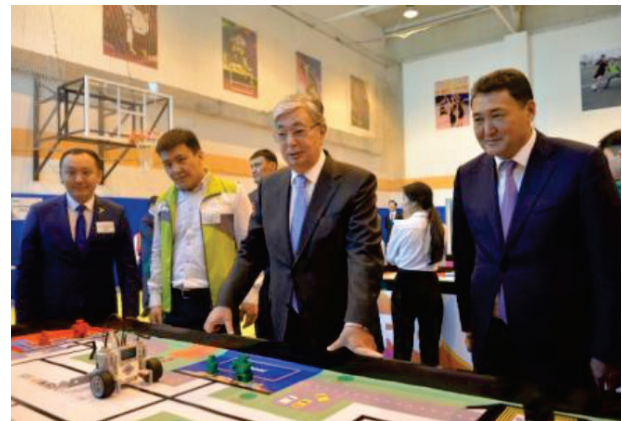
Kassym-Zhomart Tokayev, the President of Kazakhstan, visited the regional stage of the robotics Olympiad in Pavlodar.

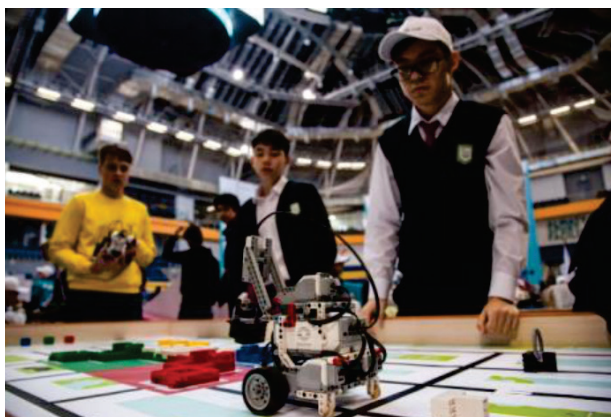
2-208 students (318 NIS students, 1-890 mainstream school students) participated in the qualifying regional stage of the Olympiad. During the first day they competed in various categories: Regular Elementary, Regular Junior, Regular Senior, Open Elementary, Open Junior, Open Senior, WRO Football, WeDo Regular, WeDo Open and Free.

In 2019, competitions in the WeDo Regular and WeDo Open categories were held for the first time at regional Olympiads. (Appendix 1 list of participants).



The winners of this stage received an opportunity to participate in the Republican stage of the robotics Olympiad.





The Republican stage of the Robotics Olympiad

On 27-28 June, 2019, the Republican stage of the robotics Olympiad was held at NIS ChB Pavlodar according to the WRO-2019 rules. 238 students participated in the Republican stage of the Olympiad: 162 NIS students and 78 mainstream school students, among them 36 were girls and 202 were boys.

This year the Republican Olympiad was held in 4 categories:

1. **Regular (main).** Participants in this category assembled a robot and programmed it to solve a predetermined task in the context of the participant's age subcategory.

a) The task for the elementary group was to develop a robot that acts as a real autonomous, unmanned taxi and can deliver passengers from starting to destination point.

b) The task for the junior group was to develop a robot that could replace traditional light bulbs with smart lights. The robot must pick up new smart light sources from the storage and deliver them to different rooms (red, blue, yellow, and green zones). In addition, it must find utilised light bulbs and deliver them to the waste zone. This way the robot can upgrade the building's lighting system and help save energy.

c) The task for the senior group was to create a robot that installs new wireless node devices and an optical network of them to upgrade the city network.

2. **Open WRO (creative)** in 2019 invited teams to come up with innovative ideas in the field of management, workplace and education with a particular role played by robots. Teams could choose one of the three given areas

or choose a project focused on several areas, such as the interaction between new management ideas and the future workplace.

3. **WRO Football** participants must assemble two teams of two autonomous robots that will play football. Two teams of two autonomous robots must score as many goals as possible using a ball that emits infrared light.

4. **Jasampaz (creative)** - participants in this category developed a 'Smart city' project using the Arduino microcontroller.

48 students became winners and awardees in the following categories: Regular Elementary, Regular Junior, Regular Senior, Open Elementary, Open Junior, Open Senior, WRO Football, Smart City (Arduino).

8 students won the Creativity Award, Girl power, and Engineering Simplicity Honours Award within the first Step Experience category in support of rural schools.

The winners received diplomas, medals, and prizes (*basic LEGO MINDSTORMS education EV3 set, extended LEGO MINDSTORMS education EV3 set, headphones, a 3D printer, wireless charging, and an MP3 player*) from the event's sponsors: Kazinterservice LLP, Basic store LLP LEGO Education and Kaspersky Lab (Kazakhstan) (*Appendix 7.8*).

All Olympiad participants, their trainers and judges received participation certificates. Each participant of the event received merchandise (a t-shirt and a bracelet) with the symbols of the Olympiad. Organisers and judges of the Olympiad and mass media representatives received badges.

Since 2019, a team competition was introduced with the Challenge Cup. The team of the West Kazakhstan region gained the largest number of prizes, became the winner of the 2019 team competition and received the WRO Challenge Cup.

The prizewinning teams were invited to take part in the robotics training camp.





Robotics training camp

Centre for Information Technology NIS organised and conducted Robotic Training Camp to prepare and form the National team for the WRO 2019 final for the following categories:

- Open categories at NIS ChB Almaty (5-10 August, 2019);
- Regular and WRO Football categories at NIS PhM Uralsk (15-23 August, 2019).

P.V. Tomshin, the coach of the Russian Federation national team in robotics, was invited as a coach for Regular and WRO Football categories. The format of the RTC was 20% theory and 80% practice on the requested questions. Participants of the training sessions learned about various algorithms, problem decompositions, and the role of physics in robot behaviour.

In accordance with the programme, students received knowledge in the following areas:

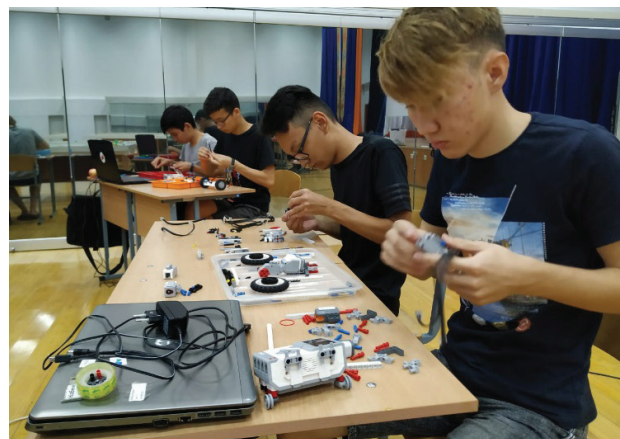
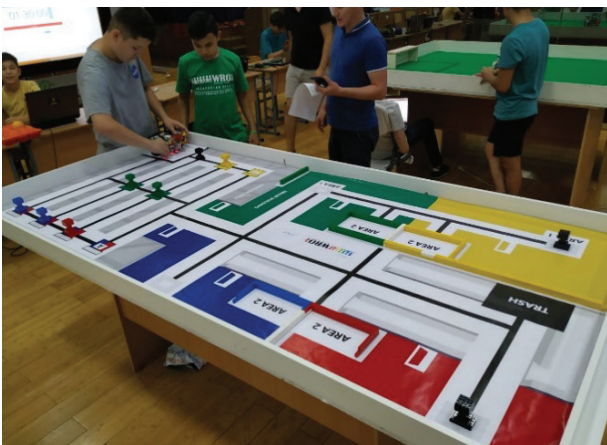
- influence of physical laws on the driving dynamics of the robot;
- algorithms of the automatic control theory;

- influence of sensor placement geometry on motion controllers;
- modular programming (subroutines);
- parallel task;
- features of work with bi-directional motors;
- algorithms for processing noisy sensor signals;
- implicit use of sensors;
- parametric algorithms;
- state machine. Scope of tasks;
- influence of the power system on the robot's dynamics.

Students also studied various approaches to solving WRO problems and other regulations, developed skills in problem decomposition, debugging programmes and structures, and in using the EV3 Basic text programming language.

Additional tasks ('surprises') that affect the algorithm of the robot programme have been developed for the qualitative national team selection. Participants completed two additional tasks per day.

The teams that showed the best and stable results were included in the national team.





The final stage of WRO.

Kazakhstan national team in robotics took part in the international stage of the WRO 2019 in Gyor (Hungary), 8-10 November, 2019.

The national team consisted of 20 students, 16 of them NIS students, 4 - mainstream school students.

424 teams from 73 countries participated in WRO 2019.



Results:

a) National team of NIS PhM Taldykorgan (Daniil Filimonov), NIS Almaty (Lyubov Dudchenko) and the NEXTROBOT, Children Intellectual Development Centre of Taldykorgan (Elina Pak) won the silver prize in the Open Senior Category.

b) The team of NIS PhM Kokshetau (Sofia Kokorina, Georgy Shilyaev) won the 8th place and entered the TOP 8 among 92 teams in the Regular Elementary Category.

c) The team of NIS PhM Uralsk (Sanzhar Serik, Miras Imangali) won the 8th place and entered the TOP 8 among 96 teams in the Regular Junior Category.

d) The team of NIS PhM Nur-Sultan (Rakhat Aitzhan, Shyryn Ospanova) won the 10th place in the Open Senior category.

e) The team of NIS PhM Uralsk (Zhangir Bayanov, Kaysar Alibekov) was the Top 16 in the Robot Football category.





TEACHER PROFESSIONAL DEVELOPMENT IN KAZAKHSTAN

4.1

Teacher training
programmes

4.2

Training trainers

4.3

Teacher professional
development

4.4

Training quality
monitoring

4.5

Post-course and methodological
support for teachers

In 2019, NIS continued the work on professional development and advanced training of Kazakhstan teachers in the framework of implementing the renewed content of education.

In 2019, Centre of Excellence organised the professional development courses for **39 801 teachers** across the country.

According to the MES schedule for the transition to the renewed content of education, CoE continued providing short-term teacher training courses. In 2019, **29 143 teachers** were trained on various programmes, which is 8.8% of the total number of teachers in mainstream schools in Kazakhstan (329 067 people).

In 2019, CoE started implementing training programmes for teachers of pre-school educational organisations. The courses were completed by 5 495 teachers of kindergartens, mini-centres, pre-school classes or 6.1% of the total number of teachers of pre-school organisations in Kazakhstan (90 671 people).

As part of implementing strategic plans, CoE organised the Leadership and Management Development Courses attended by **1 719 principals** of mainstream schools. 24.5%* of the total number of schools in the country (7 047) were engaged in the training courses.

Moreover, NIS continues providing the courses on multi-level programmes focused

on improving methodology and technology of teaching and learning. In 2019, **2 584 teachers** (0.7%*) were trained, including **2 104** mainstream school teachers and **480** NIS teachers.

To disseminate the renewed content of education, CoE organised training courses for **860 teachers** of teacher training HEIs (431 people) and colleges (429 people).

Table. Number of teachers who completed CoE courses in 2019

N	Region	Teaching methods and technology	Leadership and management	Renewed content of education	University and college professors			Pre-school educational programmes			Total in 2019	Total in 2018
					total	Universities	Colleges	total	Nursery	Pre-school teachers		
1	Nur-Sultan	138	6	755	45	27	18	228	148	80	1 172	1 066
2	Almaty	171	5	1 297	116	87	29	328	208	120	1 917	2 270
3	Shymkent	150	6	1 333	40	40	-	300	190	110	1 829	1 943
4	Akmola Region	148	211	1 707	55	19	36	254	164	90	2 375	2 218
5	Aktobe Region	130	123	1 643	52	26	26	273	178	95	2 221	2 308
6	Almaty Region	276	137	3 171	49	20	29	487	292	195	4 120	4 766

N	Region	Teaching methods and technology	Leadership and management	Renewed content of education	University and college professors			Pre-school educational programmes			Total in 2019	Total in 2018
					total	Universities	Colleges	total	Nursery	Pre-school teachers		
7	Atyrau Region	98	19	1 044	35	16	19	214	142	72	1 410	1 460
8	EKR	180	202	2 271	95	47	48	340	216	124	3 088	3 147
9	Zhambyl Region	164	127	1 931	45	20	25	353	220	133	2 620	2 899
10	WKR	96	67	1 395	31	12	19	233	158	75	1 822	1 872
11	Karaganda Region	142	135	2 005	51	13	38	350	240	110	2 683	2 613
12	Kostanay Region	84	193	1 422	61	23	38	237	162	75	1 997	1 965
13	Kyzylorda Region	150	17	1 665	46	21	25	374	234	140	2 252	2 516
14	Mangystau Region	103	26	914	42	25	17	215	160	55	1 300	1 336
15	Pavlodar Region	131	132	1 196	39	21	18	298	188	110	1 796	1 709
16	NKR	93	222	1 393	30	14	16	198	133	65	1 936	1 853
17	Turkestan Region	330	91	4 001	28	-	28	813	462	351	5 263	5 831
Total		2 584	1 719	29 143	860	431	429	5 495	3 495	2 000	39 801 (12,1%*)	41 772 (12,7%)

The decrease in the number of participants in 2019 as compared to 2018 is due to the reduction in the number of subject teachers attending the courses within the renewed content of education, as 95.2% of teachers

have been trained since 2015. The training courses under the programmes of renewed secondary education content are to be finished in 2020.

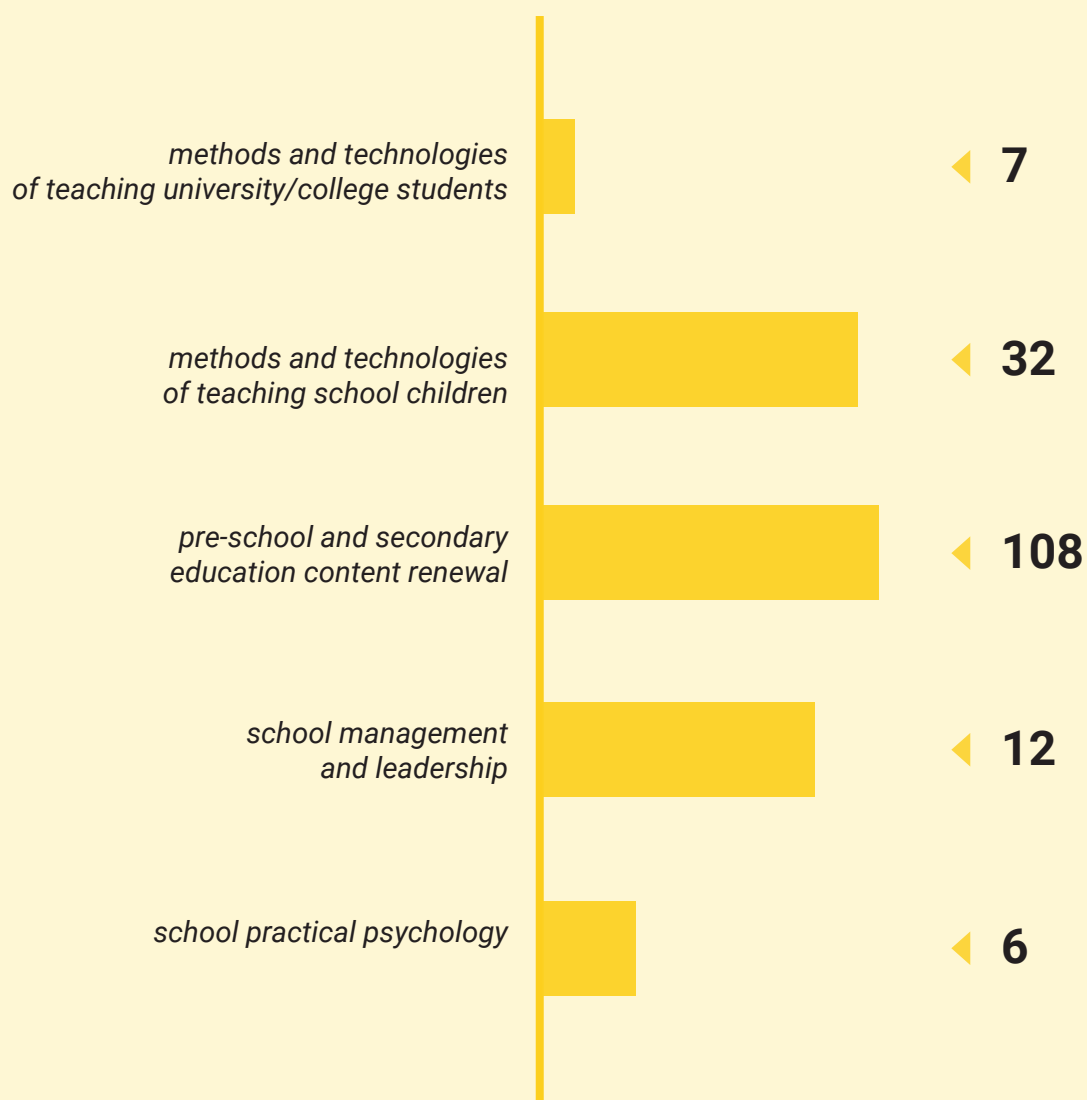
4.1. TEACHER PROFESSIONAL DEVELOPMENT PROGRAMMES

27 professional development courses for the following categories of educators were developed and finalised in 2019:

- school psychologists;
- deputy directors for pastoral work and career guidance;

- professors of teacher training HEIs in methodology of applied research;
- science and mathematics teachers of NIS and mainstream schools.

Since 2011 CoE has developed 165 teacher professional development courses in the following areas:



All teacher training programmes are approved by the orders of MES and registered in the Ministry of Justice of Kazakhstan. Electronic versions in the Kazakh and Russian languages are available at CoE website.

In 2019, the range of developed programmes has been extended. Now it includes the programmes for pastoral work and psychological service in schools that are important for the education system.

Along with the classroom-based programmes, CoE actively develops and implements online programmes that are relevant due to the capabilities of modern information technology. The programmes were provided for science and mathematics teachers of mainstream schools in Kazakh and Russian.

In 2019, NIS together with the Accreditation, Certification and Quality Assurance Institute ACQUIN (Germany) continued the work on international certification of educational programmes;

ACQUIN experts certified 4 programmes in 2019.

Thus, 8 programmes (including 4 programmes certified in 2018) received international certification:

- Teacher professional development programme (modernised multi-level programme) - Effective Learning;
- Teacher professional development programme (modernised multi-level programme) - Teacher Leadership at School;
- Teacher professional development programme (modernised multi-level programme) - Teacher Leadership in Teaching Community;
- Programmes for mainstream school leaders; professional development programme for Mathematics teachers;
- School-based teacher professional development course 'Research in teaching practice';
- Professional development courses for pre-school teachers ;
- Professional development courses for teacher training HEIs and colleges.

To develop new programmes, the CoE employees took part in a series of workshops delivered by the experts from:

- the University of Jyväskylä, Finland. Phenomenon-Based Learning. This workshop is aimed at improving STEM knowledge through phenomenon-based learning. The workshop was attended by 24 CoE programme developers and trainers. Following the results of the workshop, the participants considered the possibility of integrating this practice in the school education system.

- the University of North Carolina at Chapel Hill, USA. School Leadership.

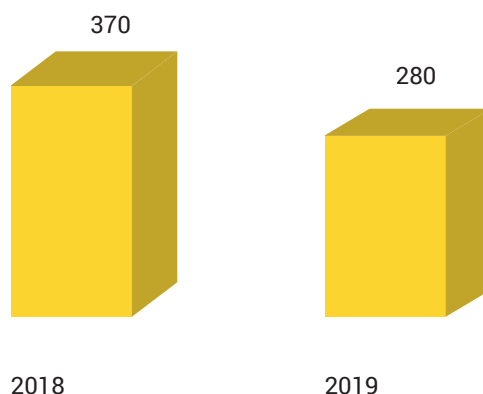
4.2. TRAINING TRAINERS

Training trainers to deliver teacher professional development courses is a key priority of CoE activity.

650 trainers from NIS, Orleu National Centre for professional development, Y. Altynsarin National Academy of Education, teachers from mainstream schools were trained in 2018-2019 to implement professional development programmes on the renewed content of education.

280 trainers completed professional development programmes launched in 2019, including:

- 159 trainers of pre-school teachers on the following programmes:
 - professional development courses for nursery teachers – 79 trainers;*
 - professional development courses for teachers of pre-school organisations and mini-centres – 80 trainers;*
- 37 trainers of professional development courses for psychologists of educational institutions;
- 84 trainers of professional development courses for Deputy Directors for Pastoral Work and Career Guidance.

Diagram. Number of trainers trained in 2018-2019

4.3. TEACHER PROFESSIONAL DEVELOPMENT

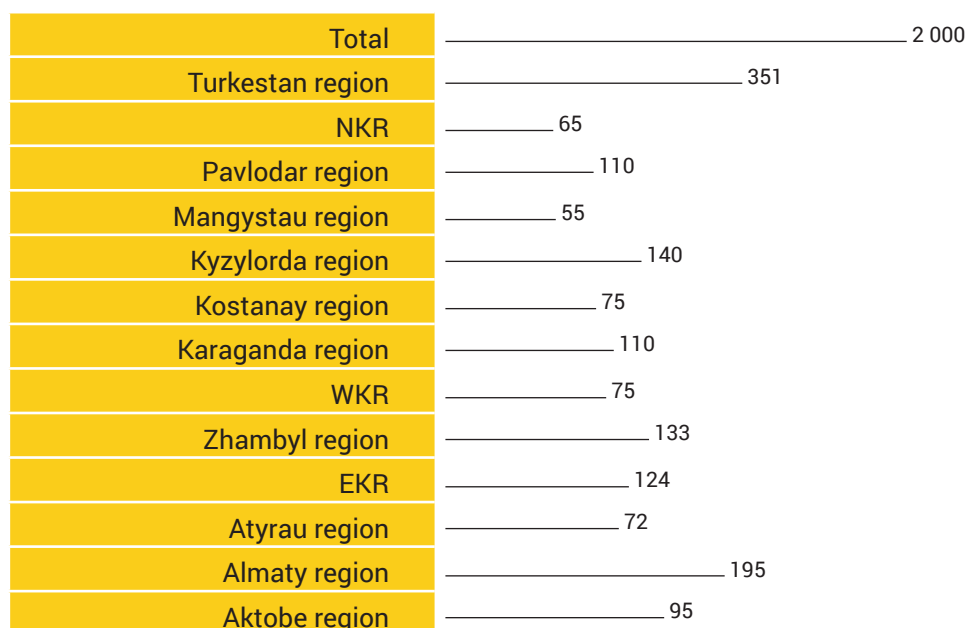
In 2018 - 2019, 5 332 teachers completed multi-level teacher training courses on teaching methods and technology, including 2 584 teachers in 2019 and 2 748 - in 2018). Increase in the number of teachers in 2019 is due to an increase in number of participants of the "Teacher Leadership at School" courses.

Post-course support is an important part of training, the main purpose of which is to provide timely methodological support to teachers within the renewed content of education.

Professional development courses for teachers of pre-school organisations

In 2019, CoE started 15-20-day professional development courses for teachers of pre-school organisations. This training will help teachers to understand what and how to teach pre-school children in developing their primary basic skills before they go to school.

The courses were organised for 2 categories of educators – nursery teachers (3 495) and teachers of pre-school organisations and mini-centres (2 000). **5 495** teachers were trained (6.1% of the total number of pre-school teachers (90 671 people).

Diagram. Teachers of pre-school organisations and mini-centres trained in 2019

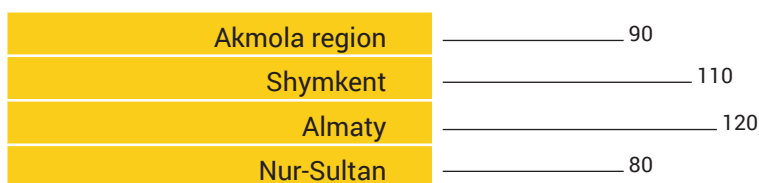
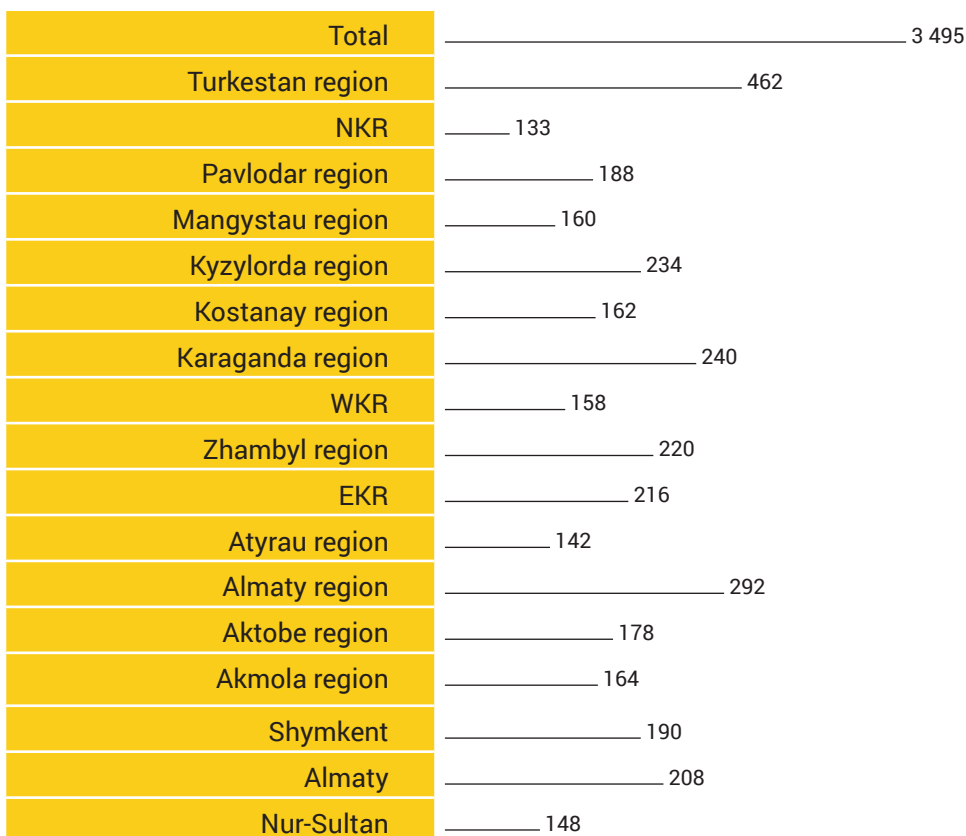


Diagram. Nursery teachers trained in 2019



Teacher professional development programmes within the renewed content of education

NIS undertakes further work on teacher professional development in terms of the renewed education content.

The courses are aimed at introducing teachers to the content of renewed educational

programmes, the assessment system, and improving their teaching and learning skills under new conditions.

A total of **344 874 people** were trained in 2018 - 2019 on various programmes within the renewed education content including **146 747 teachers** trained by CoE, and **198 127 teachers** – by Orleu.

Table. Teachers who completed the courses within the renewed content of secondary education in 2018-2019

Year	Total number of trained teachers (people)	Percent of the total number of teachers in Kazakhstan (%)	Number of teachers trained (people)	
			CoE	Orleu
2018	79 251	24,08	34 920	44 331
2019	85 932	26,11	29 143	56 789
Total for 2018-2019	165 183	50, 19	64 063	101 120

In 2019, CoE and Orleu trained **85 932** teachers (**26.11%**) including **29 143** teachers trained by CoE (8.85%), **56 789** teachers trained by Orleu (17.26%).

An increase in the number of trainees in 2019 as compared to 2018 (79 251 people) is due to the introduction of new training programmes for school psychologists and career guidance teachers.

Diagram. Teachers who completed the CoE and Orleu courses within the renewed content of education in 2018-2019

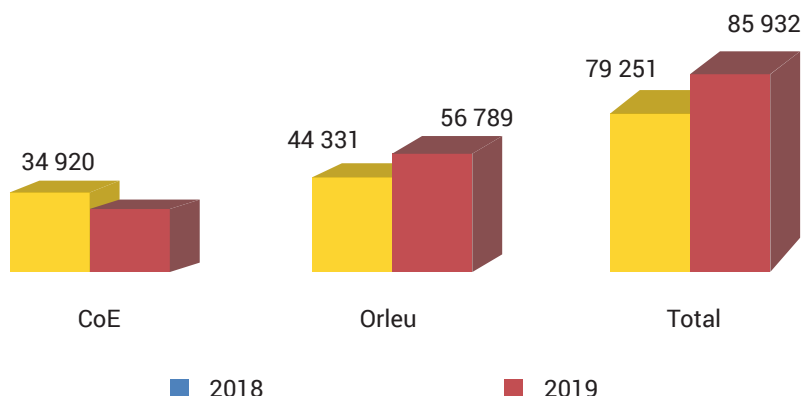
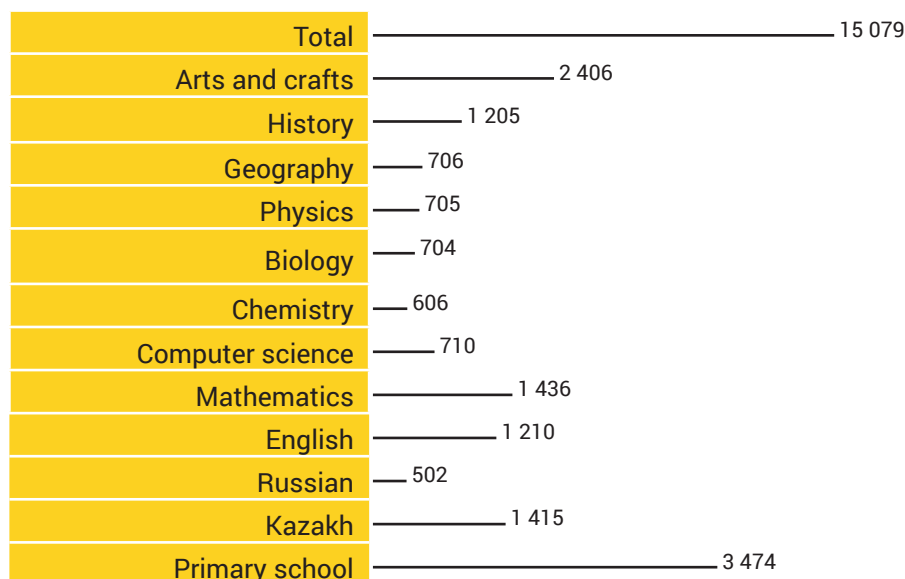


Table. Teachers (by category) who completed the CoE courses within the renewed content of secondary education in 2015-2019

Programme	trained in 2015-2019	including	
		2019	2018
Programmes within the renewed content of education:	146 747	29 143	34 920
subject teachers	74 400	15 079	24 596
school research trainers	21 043	2 000	1 526
school psychologists	1 000	1 000	-
criteria-based assessment coordinators	9 056	-	1 834
robotics teachers	6 999	2 500	1 500
assessment task developers	8 511	4 256	4 255
deputy directors for pastoral work	20 051	1 000	1 000
deputy directors for career guidance	2 900	2 900	-
heads and experts of the MES Education Control Committee	442	258	-
methodologists and specialists of regional and district/city departments of education	2 345	150	209

During the summer vacation period, 15 079 subject teachers (5.2% of the total number of subject teachers in Kazakhstan (285 996 people) completed CoE courses.

Diagram. Subject teachers who completed the CoE courses within the renewed content of secondary education in 2019



This includes 80 subject teachers of specialised art, military and sports schools.

The courses were organised in coordination with MES under the Memorandums of Cooperation between regional and city

(Nur-Sultan, Almaty, Shymkent) Departments of Education and NIS to disseminate the renewed content of secondary education to mainstream schools of Kazakhstan.

Table. Teachers of specialised schools who completed the CoE courses within the renewed content of secondary education in 2019

No.	Specialised school	Number of trained teachers
Nur-Sultan		12
1.	Specialised Boarding School for gifted children of the Kazakh National University of Arts	3
2.	General S. Nurmagambetov Zhas Ulan Republican Schools	6
3.	Kazakh National Academy of Choreography	2
4.	RPMS	1
Almaty		32
1.	Boarding school of T. Zhurgenov Kazakh National Academy of Arts	6
2.	A. Zhubanov Republican Kazakh Specialised Music Boarding School for Gifted Children	3
3.	K. Baiseitova Republican Specialised Music Boarding School for Gifted Children	1
4.	RPMS	5
5.	General S. Nurmagambetov Zhas Ulan Republican Schools	4
6.	Abay Republican Boarding School for Gifted Children	13
Shymkent		11

1	General S. Nurmagambetov Zhas Ulan Republican Schools	11
	Baldauren Republican Educational and Health Centre	25
1	Shchuchinsk	7
2	Kapshagai	10
3	Turkestan	8
	Total in Kazakhstan	80

As part of implementing new assessment system in schools across the country, since 2018, CoE and its branches have launched courses for subject teachers of mainstream schools on the 'Development and Review of Assessment Tasks'.

8 511 subject teachers were trained during the two years of the programme implementation, including **4 255** in 2018 and **4 256** in 2019, which is 3.0% of the total number of subject teachers in Kazakhstan.

Table. Subject teachers trained by CoE under the 'Development and Review of Assessment Tasks' programme in 2019

Nº	Region	Total subject teachers in Kazakhstan	Number of trained teachers	Share, %	History	Mathematics	Computer Science	Physics	Chemistry	Geography	Biology	Kazakh	Russian	English
1	Nur-Sultan	7 340	123	1,7	20	17	8	10	6	8	8	15	14	17
2	Almaty	15 185	227	1,5	22	35	13	14	10	18	13	50	23	29
3	Akmola Region	13 604	201	1,5	24	32	12	12	12	12	12	40	27	18
4	Aktobe Region	14 907	231	1,5	27	34	13	20	20	14	20	30	28	25
5	Almaty Region	34 655	511	1,5	59	74	32	30	24	33	35	99	65	60
6	Atyrau Region	9 602	145	1,5	17	22	9	9	9	9	11	26	17	16
7	EKR	20 177	305	1,5	34	30	25	28	22	26	27	44	31	38
8	Zhambyl Region	21 293	304	1,4	35	45	18	16	14	19	20	60	39	38
9	WKR	11 810	181	1,5	21	28	10	11	11	12	12	35	22	19
10	Karaganda Region	17 387	273	1,6	27	41	17	17	13	17	19	57	35	30
11	Kostanay Region	11 752	174	1,5	19	26	9	11	9	11	13	37	23	16
12	Kyzylorda Region	17 340	263	1,5	35	39	17	16	18	18	12	38	30	40
13	Mangystau Region	9 774	135	1,4	15	18	9	9	9	9	16	22	15	13
14	Pavlodar Region	11 493	182	1,6	20	28	11	11	11	11	11	40	23	16
15	NKR	10 213	156	1,5	17	22	10	10	10	10	10	30	22	15
16	Turkestan Region	44 598	633	1,4	75	105	30	45	45	45	45	93	75	75
17	Shymkent	14 866	212	1,4	26	35	10	15	15	15	15	31	25	25
Total:		285 996	4 256	1,5	493	631	253	284	258	287	299	747	514	490

In addition, since 2019, CoE has been implementing professional development programmes for psychologists and career

guidance teachers. **1 000** psychologists and **2 900** deputy directors for career guidance in schools were trained.

Diagram. Psychologists who completed the CoE courses in 2019

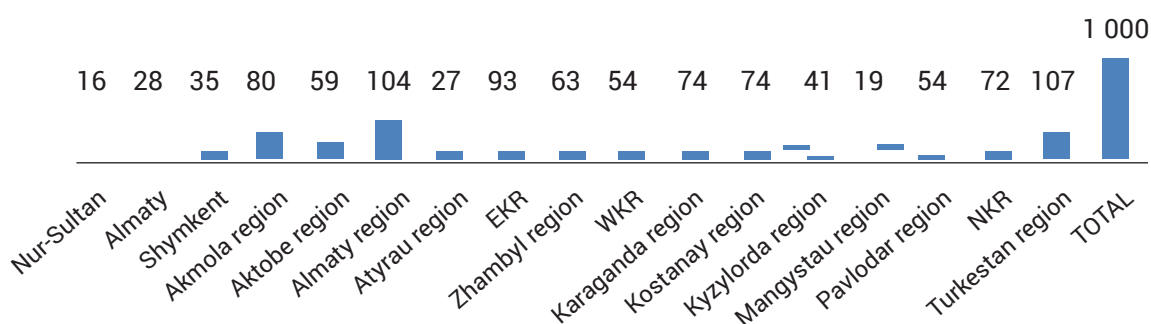
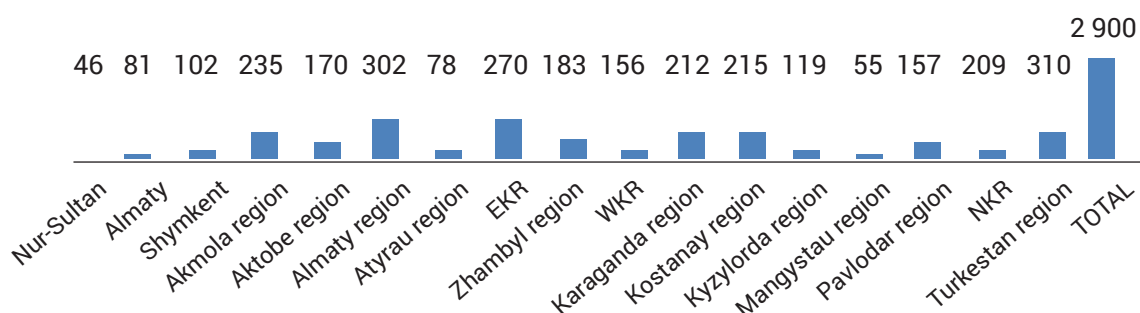


Diagram. Deputy Directors for Career Guidance who completed the CoE courses in 2019



In 2019, CoE continued training courses for methodologists and experts of education departments in Nur-Sultan, Almaty, Shymkent, regional, district and city education departments within the renewed content of education.

In 2018-2019, 617 employees were trained, including 408 in 2019. The increase in the number of trainees is due to training of employees of the Education Quality Assurance Departments in 2019.

Table. Employees of regional, district (city) departments of education and methodological offices who completed CoE courses in 2019

Heads, experts and methodologists of departments of education, city departments of education, district departments of education, methodological offices (people)					
total	2015	2016	2017	2018	2019
2 787	749	877	544	209	408

To implement 2018 – 2020 Roadmap for developing human capital in terms of the digital economy and develop media literacy of students, CoE delivers professional development courses for computer science teachers in programming, robotics and 3D printing.

In 2019, CoE organised 9-day courses on 'Programming, Robotics and 3D Printing' for 2 500 teachers of computer science and robotics in mainstream schools and supplementary

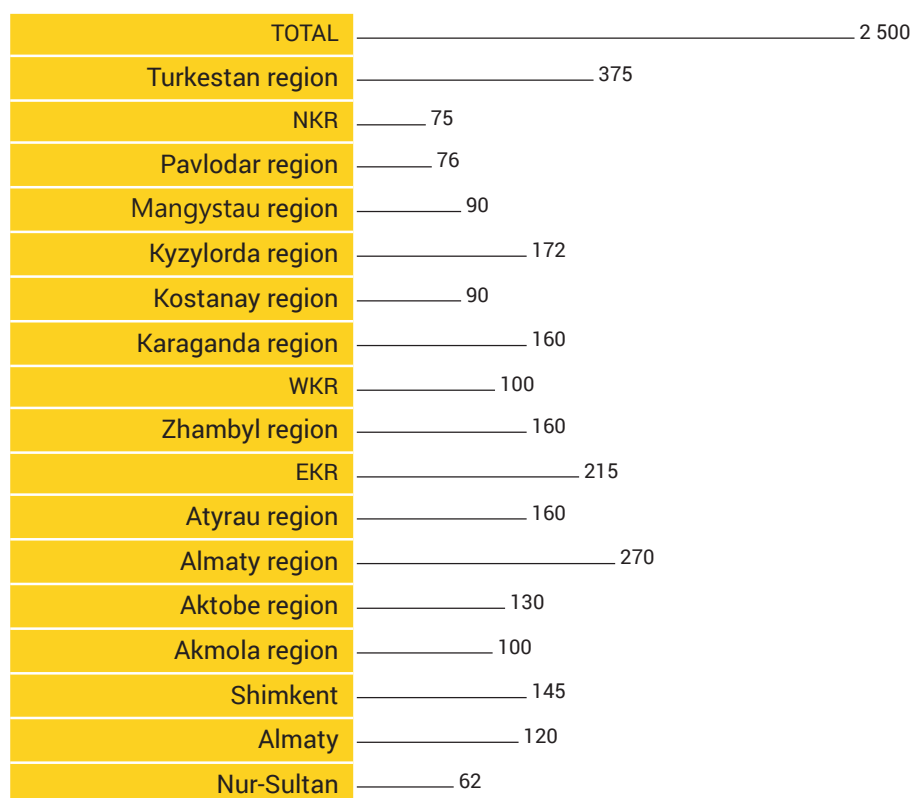
educational organisations. As compared to 2018 (1 500 people), the number of trainees increased significantly due to the specific aspects of 3D design course.

According to the training results, 86.7% of the surveyed trainees are confident that the course programme is a methodological resource for teachers that will help them in developing creative, research-inquiry and design skills.

Diagram. Teachers who completed the CoE courses on 'Robotics, Programming and 3D Printing' in 2018-2019



Diagram. Teachers of computer science and robotics who completed the CoE courses in 2019



Teacher professional development programmes on methods and technology of teaching and learning: Effective Learning, Teacher Leadership at School, Teacher Leadership in the Teaching Community

According to the Rules for Organising and Conducting Teacher Training Courses, approved by the order of the Minister of Education and Science of Kazakhstan dated 18 January 2017 No. 18, the long-term teacher training courses on methods and technology

of teaching and learning 'Effective Learning', 'Teacher Leadership at School', 'Teacher Leadership in Teaching Community' are annually organised across the country.

The content of the courses on methods and technology of teaching and learning depends on the subject: teachers are trained to use the active teaching methods and

approaches, critical thinking, consider the age appropriateness of students in lesson planning, and use ICT in the lessons.

In the period of 2018-2019, **5 332** teachers completed multi-level/ modernised multi-level courses (1.62% of the number of teachers in Kazakhstan), including 736 NIS teachers, **2 748 teachers in 2018 and 2 584 – in 2019.**

Table. Teachers of mainstream schools trained on methods and technology of teaching and learning.

№	Programme	Number of teachers trained (people)		
		total in 2012-2019	including	
			2018	2019
1	'Effective Learning'	10 701	1 173	1 282
2	'Teacher Leadership at School'	6 813	1 061	800
3	Teacher Leadership in Teaching Community	16 016	514	502
	TOTAL:	33 530	2 748	2 584

Table. NIS teachers trained on methods and technology of teaching and learning in 2018-2019.

№	Programme	Number of teachers trained (people)		
		total in 2013-2019	including	
			2018	2019
1	'Effective Learning'	2 861	177	480
2	'Teacher Leadership at School'	611	63	-
3	Teacher Leadership in Teaching Community	249	16	-
	TOTAL:	3 721	494	256

Professional development programmes for mainstream school leaders

Professional development programmes for mainstream school leaders are implemented by CoE and its branches within the long-term courses in Almaty, Uralsk in two directions - for regular and multi-grade schools.

The courses are aimed at developing key competencies in leadership and management, strategic planning and forecasting the educational processes in schools.

In 2019, 1 727 school leaders (24.52% of the number of schools in Kazakhstan) attended

the courses, including 254 principals of regular schools and 1 464 principals of multi-grade schools.

Of them, the full course (9 months) was completed by 1 188 principals (16.92% of the number of schools in Kazakhstan) including those who started training in 2018 (737) and in 2019 (451). Moreover, 530 principals completed their classroom training (the full course will be completed in 2020).

In 2018-2019, 1 967 school leaders (27.91% of the total number of schools (7 047) completed the courses.

Table. School principals who completed CoE courses

Category of trainees	Number of trainees (people)		
	total in 2014-2019	including	
		2018	2019
Completing the full course			
Principals of regular schools	4 585	249	162
Principals of multi-grade schools	1 026		1 026
Total:	5 611	249	1 188
Completing the classroom training (6-months internship at schools)			
Principals of regular schools	92		92
Principals of multi-grade schools	438		438
Total:	530		530
TOTAL:	6 141	249	1 718

Development programmes for university and college teachers

Since 2015, along with professional development courses for mainstream schools teachers, CoE has been actively conducting professional development courses for teacher training HEIs and colleges.

The dissemination of NIS experience to universities and colleges within the renewed content of education is aimed at developing continuity between levels of education (secondary, vocational and higher) and ensuring quality of teacher training under the new conditions.

In 2019, CoE organised professional development courses for the teaching staff of universities and colleges on:

- methods and technology of teaching and learning;
- renewed content of education.

In 2018 – 2019, 1 984 teachers were trained, including 860 teachers in 2019 (431 teachers from 20 universities, 429 teachers from 26 colleges). A decrease in the number of trainees in 2019 as compared to 2018 (1 124 people) is due to the fact that these courses have been implemented since 2015.

Table. University and college teachers who completed CoE courses in 2015-2019.

№	Educational organisation	Total trained	in 2015-2019		including								
					2015	2016		2017		2018		2019	
			pedagogy	renewed content of education	pedagogy	pedagogy	renewed content of education (primary school)	pedagogy	renewed content of education (primary school)	pedagogy	renewed content of education (primary school)	pedagogy	renewed content of education (primary school)
1	Universities	1 740	878	862	298	248	36	101	54	201	371	30	401
2	Colleges	1 381	579	802	0	250	0	100	50	199	353	30	399
TOTAL		3 121	1 457	1 664	298	498	36	201	104	400	724	60	800

4.3.1. ASSESSMENT IN THE FRAMEWORK OF PROFESSIONAL DEVELOPMENT COURSES UNDER TEACHER TRAINING (MODERNISED MULTI-LEVEL) PROGRAMMES

CPM provides assessment of the following three components within the framework of professional development courses under teacher training (modernised multi-

level) programmes: portfolio, presentation, qualification examination.

In 2019, 2 435 teachers were assessed for the programmes of 'Effective Learning', 'Teacher Leadership at School', and 'Teacher Leadership in Teaching Community', with 2 093 teachers recommended for certification (Table 1).

Table 1. Teachers assessed and recommended for certification in 2019 in the context of training programmes

Programme	Number of teachers who took part in the assessment procedure	Number of teachers recommended for certification	%
'Effective Learning'	877	808	92,13%
'Teacher Leadership at School'	945	852	90,16%
Teacher Leadership in Teaching Community	613	433	70,64%
Total	2 435	2 093	Average – 85.95%

The table shows that the highest percentage of teachers recommended for certification is in the programme of 'Effective training'. The share of teachers recommended for certification under the programme of 'Teacher Leadership in Teaching Community' is the lowest due to the fact that the passing score for the qualification examination for

this programme is higher than for 'Effective Learning' and 'Teacher Leadership at School'.

The share of teachers recommended for certification increased as compared to 2018 for all three programmes as follows: 'Effective Learning' – by 1.22 %, 'Teacher Leadership at School' – by 10.68 %, and 'Teacher Leadership in Teaching Community' – by 10.8%.

Table. Teachers recommended for certification in 2018 and 2019

Программа	Number of teachers who took part in the assessment procedure		Number of teachers recommended for certification		%	
	2018	2019	2018	2019	2018	2019
'Effective Learning'	1057	877	961	808	90,91%	92,13%
'Teacher Leadership at School'	1053	945	837	852	79,48%	90,16%
Teacher Leadership in the Teaching Community	772	613	462	433	59,84%	70,64%
Total:	2 829	2 435	2 260	2 093	76,74	85,95

The average number of teachers recommended for certification in 2019 is 85.95 %.

Based on the analysis of the qualification examination results, training centres received

an analytical report on improving the quality of teacher training.

The online testing platform is being upgraded to automate data collection and processing in 2020.

4.3.2.ASSESSMENT IN THE FRAMEWORK OF PROFESSIONAL DEVELOPMENT COURSES FOR MAINSTREAM SCHOOL LEADERS

The assessment of trainees of professional development courses for mainstream school leaders of trained by CoE in Nur-Sultan, Almaty and Uralsk is based on the assessment of portfolios.

In 2019, the assessment procedure for regular and multi-grade school principals was carried out in three cohorts. 986 principals

took part in the assessment procedure, and 960 of them were recommended for certification. CoE branches in Almaty (99.2% of the total number) and Uralsk (98.14% of the total number) showed the best results, while CoE in Nur-Sultan (96.35% of the total number) showed the lowest results.

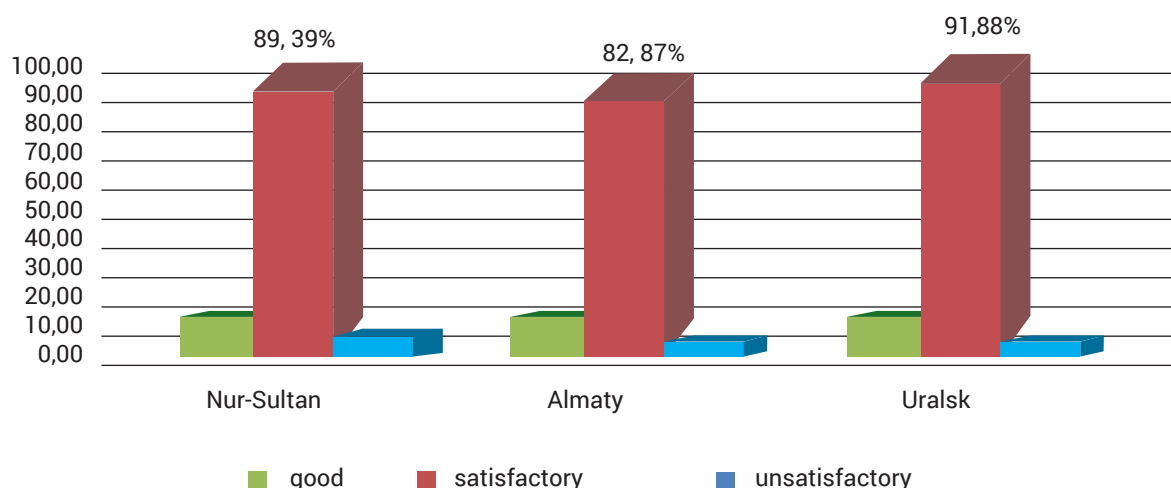
Table. Principals who took part in the portfolio assessment procedure in 3 cohorts across regions

Training centre	Number of principals who took part in the assessment procedure	Number of teachers recommended for certification	%
CoE Almaty	250	248	99,2 %
CoE Nur-Sultan	575	554	96,35 %
CoE Uralsk	161	158	98,14 %
Total	986	960	97.9% at average

The portfolios of 91 principals were rated as 'good' and 869 – as 'satisfactory'.

Diagram. The results of portfolio assessment across regions

The results of the portfolio assessment



In percentage terms, in Nur-Sultan 6.96% of portfolios were rated as 'good', in Uralsk - 6.88%, and in Almaty - 15.94%, which is 9% higher than in other branches. There is a range of 6-9% between 'satisfactory' scores, and insignificant difference between 'unsatisfactory' scores.

The analysis of portfolio assessment showed that school principals received high scores:

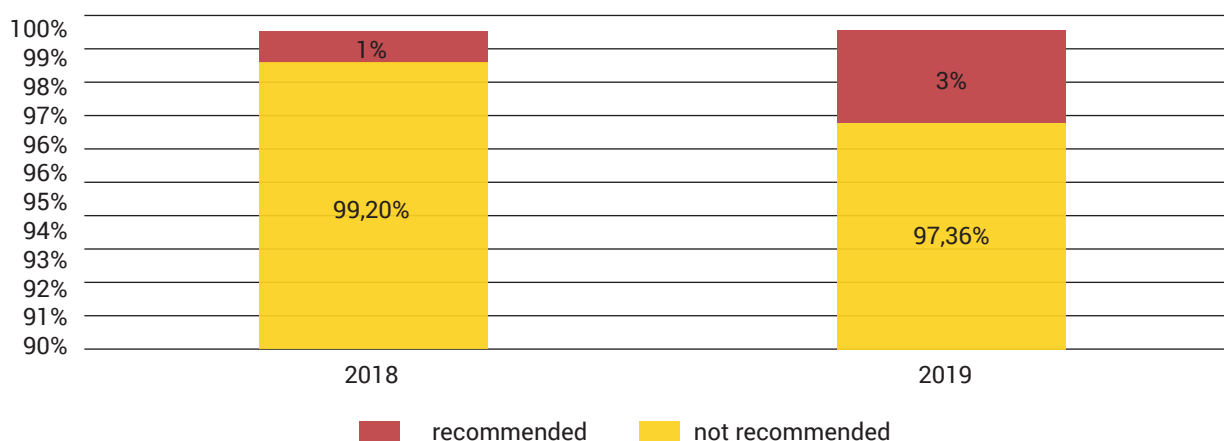
- in Nur-Sultan, for a reflective report based on the school practice research;
- in Almaty, for a reflective report based on the implementation of pilot planning for school development.

The principals experienced difficulties in drafting reflective reports on the implementation of pilot planning for school development with preliminary analysis of research results, priorities for the development of school teachers, and school development plan.

Following the results of the portfolio assessment procedure, the training centres received 3 analytical reports with recommendations for improving the training programme.

In the period from 2018 to 2019, 1 955 principals were recommended for certification, and 34 were not recommended.

Diagram. Comparative data on the number of principals (% ratio) recommended and not recommended for certification in 2018 and 2019.



In 2019, the number of principals recommended for certification decreased by 2%, as compared to 2018, due to the increase in the number of principals of multi-grade schools who have experienced

difficulties in making reflective reports on the implementation of school development plan according to the interim targets, and final reports on the development and analysis of preliminary results.

4.3.3. ASSESSMENT OF TRAINERS IN THE FRAMEWORK OF PROFESSIONAL DEVELOPMENT COURSES

In 2019, 140 trainer portfolios were assessed under the training programmes of 'Effective Learning', 'Teacher Leadership at School' and 'Teacher Leadership in Teaching Community'.

According to the assessment results, 55

trainers were recommended for recertification, and 2 - for certification on other programmes.

23 trainer portfolios on professional development courses for principals were assessed. According to the results, 11 trainers were recommended for recertification.

Table. Trainers recommended for certification, recertification and confirmation of other programmes in 2018-2019

Training programme	Certification				Recertification				Confirmation of other programmes			
	recommen- ded		not recom- menddd		recommen- ded		not recommen- ded		recommen- ded		not recommen- ded	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Effective Learning	1	-	-	-	8	20	-	-	1	-	1	-
Teacher Leadership at School	1	-	-	-	24	13	1	-	6	2	-	-
Teacher Leadership in the Teaching Community	1	-	-	-	6	12	-	-	2	-	1	-
Principal development courses	-	-	-	-	5	10	-	-	4	-	-	-
Total	3				43	55	1		13		2	

In general, based on the observation of trainers' practice and the results of trainers' portfolios assessment, it was noted that the portfolios contain strong evidence of reflection and self-development, and evaluation of the quality of teacher training. This is confirmed by the findings on effectiveness of teaching

approaches, the strengths and weaknesses of practice, and the influence of experience gained before recertification on the training of the last cohort of teachers. The planned adjustments are informed by the identified difficulties.

4.3.4. ASSESSMENT OF TRAINERS DURING PROFESSIONAL DEVELOPMENT COURSES FOR MAINSTREAM SCHOOL TEACHERS WITHIN THE RENEWED CONTENT OF SECONDARY EDUCATION

In 2019, CPM assessed the presentations submitted by 73 241 trainees (including 1 490 trainees who were reassessed) of professional development courses for mainstream school teachers within the renewed content of secondary education.

Defence of the presentations on lesson planning for 1-2-week courses involves evaluating understanding and application of pedagogical approaches, criteria-based assessment system within the renewed subject programme according to four criteria:

1) lesson objectives;

2) active learning methods;

3) differentiation methods;

4) criteria-based assessment.

During 3-4-week courses, in addition to the criteria mentioned above, there a fifth criterion to be assessed - findings on the influence of microteaching on lesson planning.

The following presentations were assessed:

- 56 697 presentations of teachers trained by Orleu, with 55 384 recommended for certification;

- 15 054 presentations of teachers

trained by CoE, with 14622 recommended for certification (excluding reassessment).

The highest number of teachers trained in CoE and recommended for certification was registered in Turkestan Region (99.20%),

while the lowest number – in Almaty Region (94.77%). As for Orleu, the highest rate was registered in Nur-Sultan (99.36%), and the lowest – in Mangystau Region (95.51%).

Table. Quantitative data by region

	CoE		Orleu		CoE	Orleu
Region	took part in assessment procedure	recommended for certification	took part in assessment procedure	recommended for certification	%	
Akmola Region	825	783	2608	2559	94,91	98,12
Aktobe Region	806	795	3052	2936	98,64	96,20
Almaty Region	1645	1559	6835	6689	94,77	97,86
Atyrau Region	524	512	1877	1839	97,71	97,98
East Kazakhstan Region	1083	1070	3623	3560	98,80	98,26
Zhambyl Region	1040	1009	4323	4264	97,02	98,64
West Kazakhstan Region	652	645	2427	2354	98,93	96,99
Karaganda Region	1084	1060	3316	3270	97,79	98,61
Kostanay Region	627	622	2218	2178	99,20	98,20
Kyzylorda Region	896	860	3579	3518	95,98	98,30
Mangystau Region	505	493	2025	1934	97,62	95,51
Pavlodar Region	585	575	2210	2177	98,29	98,51
North Kazakhstan Region	626	604	1983	1945	96,49	98,08
Turkestan Region	302	299	8293	8052	99,01	97,09
Shymkent	2693	2627	4268	4152	97,55	97,28
Almaty	748	717	2802	2707	95,86	96,61
Nur-Sultan	413	392	1258	1250	94,92	99,36
Total	15054	14622	56697	55384	97,13	97,68

*as of 13 December 2019

Teachers trained by CoE under the programmes and recommended for certification showed high results in Kazakh language (98.73%), and low results in Arts and

Crafts (94.33%); those trained by Orleu – the highest results in Mathematics (98.95%), and the lowest results in Arts and Crafts (93.80%).

Table. Quantitative data by programmes

Programme	CoE		Orleu		CoE	Orleu
	took part in assessment procedure	recommended for certification	took part in assessment procedure	recommended for certification	%	
English language	1208	1163	3504	3421	96,27	97,63
Biology and Science	704	689	1532	1511	97,87	98,63
World History and Basics of Law	360	349	1491	1465	96,94	98,26
Geography and Science	706	695	1489	1461	98,44	98,12
Graphics and Design**	-	-	891	878	-	98,54
Computer Science	709	687	1461	1420	96,90	97,19
History of Kazakhstan and Basics of Law	843	828	2575	2534	98,22	98,41
Kazakh language	1413	1395	6937	6844	98,73	98,66
Mathematics	1434	1405	4585	4537	97,98	98,95
Primary school	3468	3397	15469	15200	97,95	98,26
Russian language	501	476	4019	3959	95,01	98,51
Physics	703	682	1314	1298	97,01	98,78
Chemistry and Science	606	593	896	881	97,85	98,33
Physical education	-	-	6613	6297	-	95,22
Arts and Crafts	2399	2263	3921	3678	94,33	93,80
Total	15 054	14 622	56 697	55 384	97,13	97,68

*as of 13 December 2019

** CoE did not provide courses on Graphics and Design and Physical Education programmes

Following the assessment results, Orleu training centre was provided with an analytical report on improving the quality of teacher training.

To explain the assessment procedures instructional videos were created in the Kazakh and Russian languages and published on the CPM website.

To develop understanding of approaches to teacher training and assessment, Orleu organised a workshop on 'Features of Subject Programmes and Criteria-Based Assessment System within the Renewed Content of Secondary Education in Kazakhstan' for 300 trainers on 3 - 11 January, 2019.

4.3.5. ASSESSMENT OF TEACHERS WITHIN THE EDUCATIONAL PROGRAMME OF 'DEVELOPMENT AND REVIEW OF ASSESSMENT TASKS'.

In 2019, 3 406 teacher portfolios were assessed across 12 programmes, and 3 277 of them were recommended for certification.

Table. Teachers assessed and recommended for certification in 2019 by subject programmes

Nº	Programme	Number of teachers who completed the courses	Number of teachers recommended for certification	%
1	English language	490	466	95,10
2	Kazakh language and Kazakh literature	472	442	93,64
3	Kazakh language and Literature	275	258	93,82
4	Russian language and Russian literature	188	179	95,21
5	Russian Language and Literature	324	307	94,75
6	History of Kazakhstan and World history	493	489	99,19
7	Geography	287	274	95,47
8	Chemistry	258	254	98,45
9	Biology	299	287	95,99
10	Mathematics	631	601	95,25
11	Physics	283	282	99,65
12	Computer Science	252	238	94,44
	Total	4 252	4 077	95,88

*as of 20.12.2019

According to the assessment results, 96% of teachers were recommended for certification. The lowest number of teachers recommended for certification is in 'Kazakh language' and 'Kazakh literature' (93.64%) and 'Kazakh language and Literature' (93.82%).

The analysis of the assessment results by region showed that Pavlodar, Kostanay, Taldykorgan and Uralsk have the highest number of teachers who were recommended for certification (98%), while Almaty has the lowest number (90.22%). 86 portfolios were selected and uploaded to ERP.

Table. Teachers recommended for certification in 2019 by region

Nº	Region	Number of teachers who completed the courses	Number of teachers recommended for certification	%
1	Aktau	135	129	95,56
2	Aktobe	231	225	97,40
3	Almaty	225	203	90,22
4	Atyrau	145	135	93,10
5	Karaganda	273	258	94,51
6	Kokshetau	201	190	94,53
7	Kostanay	174	171	98,28
8	Kyzylorda	263	253	96,20
9	Pavlodar	182	179	98,35
10	Petropavlovsk	156	145	92,95
11	Taldykorgan	511	504	98,63
12	Taraz	304	293	96,38
13	Uralsk	181	179	98,90
14	Ust-Kamenogorsk	305	296	97,05
15	Shymkent	843	800	94,90
16	Nur-Sultan	123	117	95,12
	Total	4 252	4 077	95,88

*as of 20.12.2019

A total of 8 506 teachers took part in the assessment procedure in 2018-2019, and 8198 of them were recommended for certification.

Table. Results of the summative assessment of teachers' portfolios across programmes for 2018-2019.

№	Programme	Number of teachers recommended for certification		%	
		2018	2019	2018	2019
1	English language	454	466	93,03	95,10
2	Kazakh language and Kazakh literature	503	442	97,10	93,64
3	Kazakh language and Literature	303	258	96,19	93,82
4	Russian language and Russian literature	204	179	97,14	95,21
5	Russian Language and Literature	313	307	96,90	94,75
6	History of Kazakhstan and World history	486	489	97,39	99,19
7	Geography	259	274	95,57	95,47
8	Chemistry	208	254	97,65	98,45
9	Biology	270	287	95,74	95,99
10	Mathematics	633	601	99,69	95,25
11	Physics	244	282	97,60	99,65
12	Computer Science	244	238	97,21	94,44
	Total	4121	4 077	96,85	95,88

*as of 30.10.2019

The analysis of portfolio units A⁴ and B⁵ assessment results revealed the difficulties experienced by teachers with the following criteria: 'Tasks', 'Descriptors', and 'Marking scheme'.

Following the assessment results, CoE received 2 analytical reports on improving the quality of teacher training, and the following recommendations: to support teachers in

developing skills of creating assessment criteria and descriptors according to learning objectives, and working individually to develop summative assessment tasks for units and terms.

To explain the assessment procedures Instructional videos were created in the Kazakh and Russian languages and published on the CEP portal.

4.3.6. ASSESSMENT WITHIN THE PROFESSIONAL DEVELOPMENT COURSES FOR TEACHERS OF PRE-SCHOOL ORGANISATIONS

CPM implements an assessment of presentations made by the teachers of pre-school organisations according to five assessment criteria:

- 1) objectives of structured learning activities;
- 2) ways to engage children in structured learning activities;

- 3) differentiation methods;
- 4) forms of observation;
- 5) conclusions on planning of structured learning activities.

In 2019, 2 000 presentations of teachers were assessed, and 1965 of them were recommended for certification.

⁴ Unit summative assessment

⁵ Term summative assessment

Table. Teachers recommended for certification in 2019, by cities

City	Number of teachers who took part in the assessment procedure	Number of teachers recommended for certification
Aktau	55	49
Aktobe	95	95
Almaty	120	120
Atyrau	72	72
Karaganda	110	110
Kokshetau	90	90
Kostanay	75	75
Kyzylorda	140	140
Nur-Sultan	80	79
Pavlodar	110	109
Petropavlovsk	65	65
Taldykorgan	195	189
Taraz	133	128
Uralsk	75	62
Ust-Kamenogorsk	124	124
Shymkent	461	458
Total*	2 000	1 965

The analysis of assessment results by region showed that Aktobe, Almaty, Atyrau, Karaganda, Kokshetau, Kostanay, Kyzylorda, Petropavlovsk and Ust-Kamenogorsk have the highest number of teachers who were recommended for certification, and Uralsk have the lowest number.

The average value for the five criteria is 1.91. The lowest rate (1.54) is in 'Differentiation methods', while the highest rate (1.95) is in 'Objectives of structured learning activities'.

According to the professional development programme for teachers of pre-school organisations, the portfolio is subject to assessment and should consist of three units: Unit A (Long-term plan and cyclogram), Unit B (Learning story), Unit C (Reflective report on implementing changes in teaching and management practice).

In 2019, 3 495 portfolios were assessed, and 3 435 of them were recommended for certification.

Table. Teachers recommended for certification in 2019, by cities

City	Number of teachers who took part in the assessment procedure	Number of teachers recommended for certification
Aktau	160	152
Aktobe	152	152
Almaty	170	161

City	Number of teachers who took part in the assessment procedure	Number of teachers recommended for certification
Atyrau	142	133
Karaganda	116	115
Kokshetau	80	79
Kostanay	162	161
Kyzylorda	234	228
Nur-Sultan	84	83
Petropavlovsk	188	179
Taldykorgan	133	128
Taraz	267	267
Uralsk	220	218
Shymkent	158	149
Total*	2 816	2 743

*as of 31 December, 2019

4.4. TRAINING QUALITY MONITORING

All the main stages of implementing the CoE training programmes are accompanied by the following monitoring studies:

- at the pre-course stage – to identify the needs of the target audience and develop the conceptual foundations of training programmes;

- at the course stage – to assess the programmes during the professional development courses;

- at the post-course stage – to collect evidence of successful integration of the ideas of the training programmes into school practice in order to transform it.

Table. Types of monitoring studies

Type of research	Objective	Application of results
Pre-course	Identification of professional problems and needs of the target audience.	Development of the concept, thematic content, aims, objectives, and expected outcomes of the professional development programmes.
Course	<ul style="list-style-type: none"> • the initial professional competence of trainees and the effectiveness of training ('input' and 'output' diagnostics); the relevance and practical significance of training programmes; the quality of the learning process organisation; • the effectiveness of trainers' work during the training period. 	<ul style="list-style-type: none"> • Timely adjustment of the training programmes, and methodological support; • Data systematisation for SWOT analysis of trainers' activity; • Determining the professional development trajectory; • Elimination of errors in the solution of organisational issues related to professional development courses.

Post-course

Comparative analysis of:

- the actual state of school practice against the success criteria and determining professional difficulties of teachers during the post-course period;
- the nature of transformations in school practice;
- the dynamics of learning achievements and students' personal development;
- complying with parents' demands;
- teacher involvement in school development;
- the effectiveness of methodology support provided by the CoE trainers.

- Preventing potential risks and formalistic use of programme ideas;
- Quality management of teachers' post-course activity and transformations in schools.

The studies involve the following traditional methods: questionnaires, teacher observations, and interviews.

The comprehensive nature of the study is

due to the use of a system of parameters and methodological tools.

In 2019, a total of 26 820 respondents participated in 19 monitoring studies:

Number of studies	Programme	Number of respondents	Publication of results	Types of study
1	The survey results of mainstream school teachers of Kazakhstan on evaluating the effectiveness and demand for online professional development courses	1 920	Brochure 8	Pre-course
1	The survey results of the heads of kindergartens, methodologists and nursery teachers in Almaty Region	636	Brochure 9	Pre-course
1	The monitoring study results of the trainer training course under professional development programmes for pre-school teachers, pre-school classes and zero grade groups	79		Course
2	The survey results of teachers and students of the Zh. Dosmukhamedov Pedagogical College in West Kazakhstan Region	269, including: 123 students, 146 teachers	Brochure 10	Pre-course
1	The survey results of the trainees of 'Digital Technology in Schools' workshop with the participation of Douglas K. Hartman, Professor of Michigan State University (USA)	45	Brochure 11	Pre-course
1	The survey results of international teachers of NIS	30	Брошюра 12	Pre-course

Number of studies	Programme	Number of respondents	Publication of results	Types of study
1	The diagnostics results of the initial state of teaching and learning practice in the Peterfeld school in NKR	149	Brochure 13	Pre-course
1	The survey results of Physics, Chemistry, Biology, Computer Science teachers trained under the programme on improving language competence in 2017-2018	830	Book 40	Post-course
1	Analysis of the course monitoring study results on assessment of the training programme on 'Programming, Robotics and 3D-Printing' and the effectiveness of teacher training	518	Book 41	Course
1	Analysis of the survey results of language teachers (Kazakh, Russian, English, French, German) of mainstream educational organisations	8 240	Book 42	Pre-course
1	Leading schools as a mechanism for ensuring effectiveness of teacher professional development in regional schools (results of the second stage of the monitoring study)	8 511	Book 43	Post-course
1	The monitoring study results of professional needs and demands of the heads of regional, district and city departments of education, and those in cities of republican significance	179		Pre-course
1	The monitoring study results on the effectiveness of professional development courses for the heads of regional, district and city departments of education, and those in cities of republican significance	217	Book 44	Course

Number of studies	Programme	Number of respondents	Publication of results	Types of study
1	The course monitoring study results on evaluating the content and effectiveness of training pedagogical university and college teachers under the programme of supplemental professional education developed on the basis of CoE multi-level programmes	60		Course
1	The course monitoring study results on evaluating the content and effectiveness of training pedagogical university and college teachers in terms of the renewed education content	800		Course
1	The survey results of trainees who completed training under the programme 'Development of Tasks for Criteria-Based Assessment'	4 256		Course
2	The survey results of heads and teachers of pilot schools	81		Post-course
TOTAL:				
19		26 820		Pre-course - 9 Course - 6 Post-course - 2

4.5. POST-COURSE AND METHODOLOGICAL SUPPORT OF TEACHERS

According to the principles of continuing education, CoE provides post-course methodological support for teachers as an integral part of teacher professional development.

The main goal of the post-course support is to provide timely methodological assistance to teachers of educational organisations on issues of implementing the renewed education content.

In this regard, in 2014, CoE developed the Regulation on post-course support for teaching staff trained under the professional development programmes for teachers, to be the first to define the interaction mechanism between CoE, NIS schools and leading⁶ schools in the country.

Implementation of the Lesson Study Kazakhstan project

As a member to the World Association of Lesson Studies, CoE is actively implementing the Lesson study Kazakhstan project aimed at applying the pedagogical Lesson Study approach by teachers, which is considered as a way for teachers to improve their teaching practices and a professional development tool.

In 2018, CoE started training school trainers on research and further implementation of the school-based course 'Teacher Practice Research'.

In two years, 3 526 school trainers on research have been trained, including 2 000 trainers in 2019.

⁶ A regional school that is a platform for supporting the renewed content of education (the list of schools is approved by the Department of Education).



To develop the **Lesson Study Kazakhstan** project, Toshiya Chichibu, a leading researcher at the National Institute for Educational Policy Research, visited CoE in 2019.

As part of the visit, Toshiya Chichibu and a group of the CoE employees visited secondary mainstream schools in Nur-Sultan, Almaty, Kokshetau, and provided methodological support to teachers involved in the process of implementing this project in mainstream secondary schools.

In 2019, in terms of cooperation, CoE, together with its strategic partner, the University of Cambridge, organised a workshop on 'Leadership in Lesson Study' delivered by Peter Dudley, an international expert in lesson study, the President of the World Association of Lesson Studies (WALS). Peter Dudley held 2 webinars examining the research conducted by trainers studying the ways of implementing the Lesson Study approach in schools. The participants also considered planning research on the impact assessment of the Lesson Study on learning.



In 2019, CoE took part in the Annual International Conference of the World Association of Lesson Studies (WALS) to present its experience on the theme 'Development of Sustainable Pedagogy for Teaching and Learning' (Amsterdam, Netherlands). CoE trainers shared their experience in implementing the 'Lesson Study' approach in different regions of Kazakhstan, and presented the impact of this approach on the professional development of teachers. In addition to the reports, the trainers delivered two master classes on the themes 'Forms of management', 'Reflection and models of joint lesson planning'.

The majority of schools of the country are involved in the Lesson Study project as evidenced by their active participation in regional conferences, workshops, round tables and dialogue platforms. The schools involved in the Lesson Study project, took part in:

- 16 regional and 1 city (Nur-Sultan) Research-to-Practice conferences on 'Lesson Study: experience of Kazakhstani schools' for the teachers across the country. The conference included an exhibition of educational literature and poster presentations.

- 126 workshops and master classes, round tables to get practical help from organisers and colleagues in the issues of implementing the approach.

In 2019, the CoE trainers continued working on

13 independent studies on the impact of the Lesson Study approach on changes in the quality of teaching and learning in Kazakhstani schools.

There is an agreement with international experts (Japan) to conduct a study of 'The Lesson Study model in Kazakhstan' in 2020-2021.

Social educational network of teachers

The CoE website presents a platform for a social educational network of teachers providing them an opportunity to participate in a professional dialogue on teaching and learning, and to get advice from trainers. In 2019, there were 2 667 active groups in the social network.

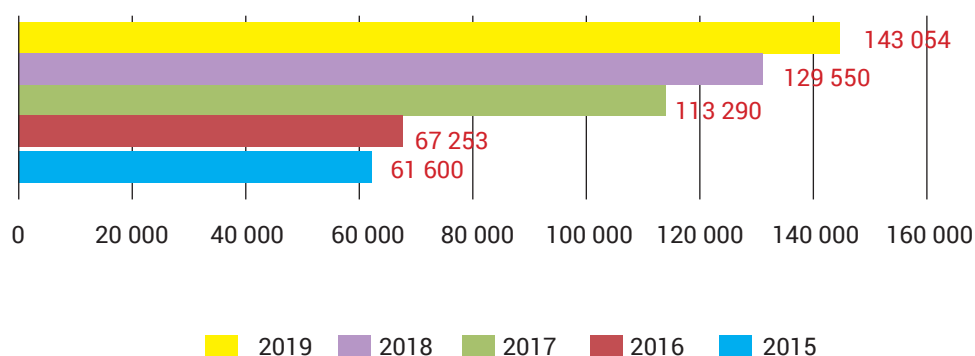
The network activity of teachers and those involved in the educational process is one of the most relevant issues of informational support in the education system.

As of November 2019, 143 054 users

registered at the CoE portal. The number of users of the educational portal is increasing.

The trainers' activity in engaging teachers to discuss current education themes through the chats and blogs will be continued in the future.

Numbers of users





COOPERATION IN NIS EXPERIENCE DISSEMINATION

5.1

30 pilot schools
project

5.2

NIS schools – regional
methodological centres

5.3

Dissemination of experience
across the country

5.1. 30 PILOT SCHOOL PROJECT

In 2019, piloting of subject programmes within the renewed content of primary education was completed in 30 pilot schools of the country.

Methodological support of the piloting was provided through:

- online and offline counselling of teachers by authors and developers of subject programmes, textbooks, and digital educational resources, experts in criteria-based assessment ;

- updating teaching and learning materials on www.smk.edu.kz;

- assigning pilot schools to NIS schools. The schools followed the jointly developed plan that clearly outlines the activities on methodological and resource support for teachers and the administrative staff of pilot schools. Subject teachers planned their lessons collaboratively, NIS teachers and CoE trainers observed the lessons and provided feedback, delivered master classes, training sessions, workshops and held meetings with parents;

- creating a professional network of teachers so that CoE trainers could provide methodological support to teachers of pilot, leading and partner schools. The network helped school leaders and teachers increase their level of pedagogical excellence by sharing experience, cooperation, online and offline discussion of issues of concern;

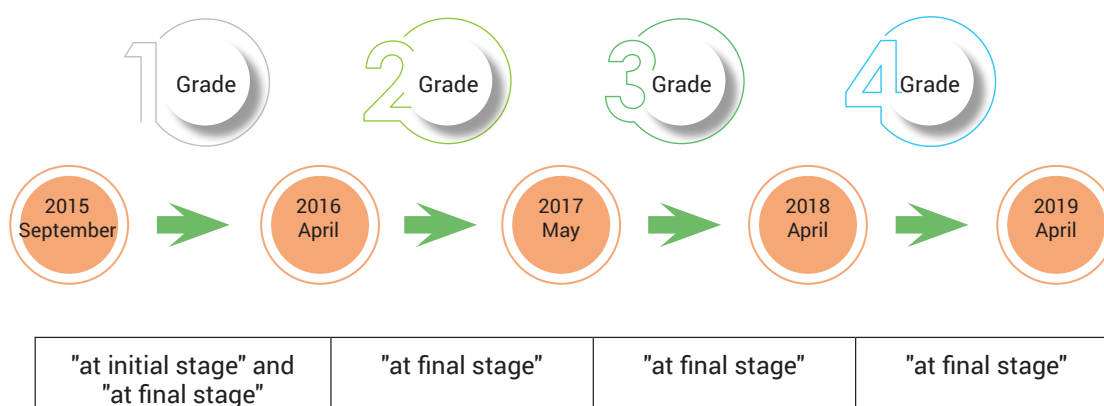
- more than 10 thousand events (83 round table discussions; 1 284 workshops, 974 training sessions, 2 369 master classes, 1 468 lesson observation-based consultations, 819 team teaching lessons, 78 parent lectures, 452 online lessons and training sessions) jointly organised by NIS teachers and CoE trainers for 4 years (2015-2019). Trainers and mentors supported the school-based professional development system and the development of methodological capacity of schools. The major focus was on the continuity of learning, development of cognitive skills and emotional intelligence of students.



5.1.2. MONITORING THE PILOTING OF THE RENEWED EDUCATION CONTENT IN PILOT SCHOOLS

The piloting of the renewed education content in pilot schools had been monitored for 4 years (2015-2019) through the five stages of student diagnostic testing in pilot and control schools across 14 regions and 2 cities of

republican significance in accordance with the Methodology for monitoring the piloting of State Compulsory Standard for Primary Education (approved by MES on 21 July, 2015).



The aim of the monitoring was to assess the quality and effectiveness of the renewed education content in the real learning process across 30 pilot schools to be further implemented in mainstream schools.

Study participants

30 pilot and 16 control schools participated in a diagnostic testing in the period of 2015 – 2019.

The diagnostic testing aimed to check knowledge and skills of students in Science, World understanding, L1 and Mathematics.

Based on the testing results, the indicators were compared and statistically processed.

The tasks were developed based on the themes studied in pilot and control schools and included the following types:

- close-ended tasks with one or more possible answers;
- open-ended tasks that require a brief or detailed answer.
- Based on the results of the diagnostic test, pilot school students were provided with individual reports including their results (across test sections) and progress in dynamics.

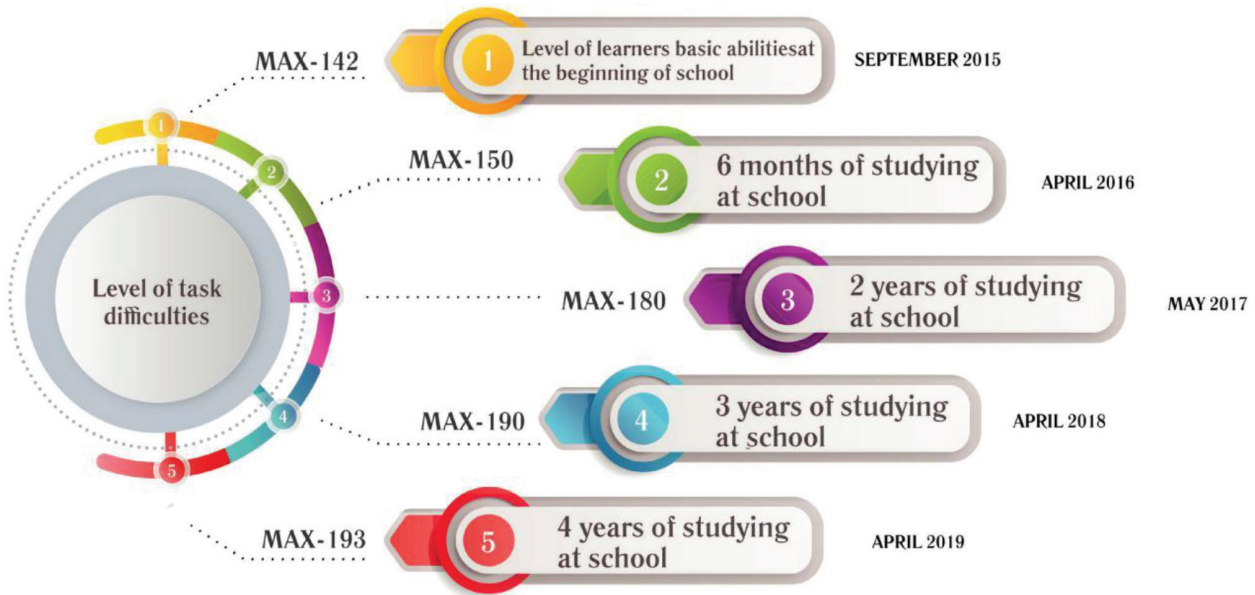
Pilot and control school distribution map



The data were processed on the basis of item response theory including the one parameter logistic model. The model calculates the student's ability score based on the discriminatory properties of test assignments and the level of their complexity.

The scale of student's abilities was designed based on the anchored tasks which is applicable to all five types of tests. The achievements of every student are correlated with the scale that calculates the level of their abilities, measures their progress, and tracks their success throughout the learning period.

Student ability scale



The diagnostic test showed the following results.

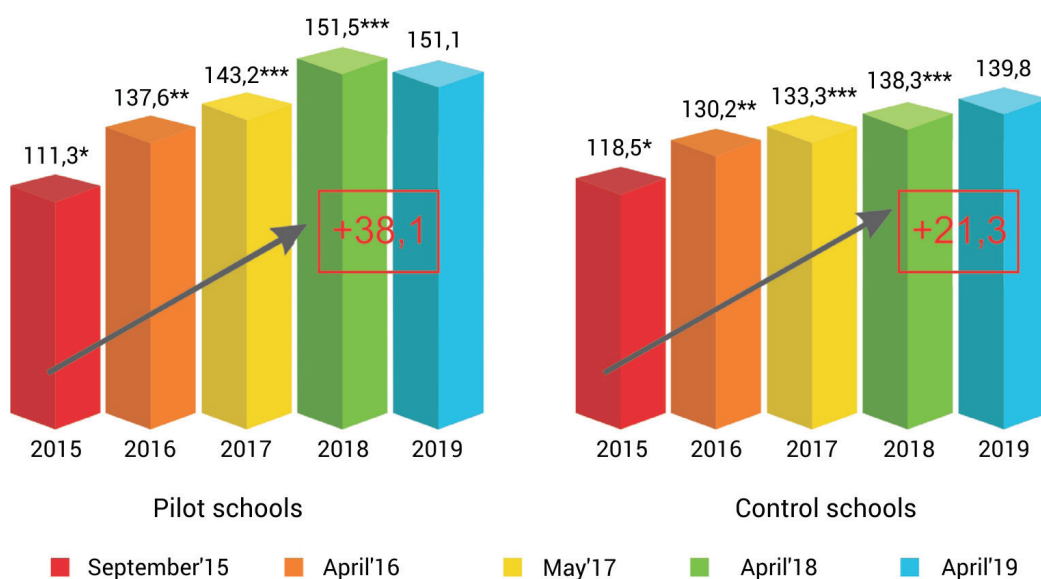
1. Progress in average scores

The comparative analysis of five diagnostic test results demonstrates an increase in the average scores of pilot school students (113,0; 137,6; 143,2; 151,5; 151,1) and control school

students (118,5; 130,2; 133,3; 138,3; 139,8).

It should be mentioned, that by the end of Grade 4, according to the tests' results, pilot schools have a significant progress of the average score (+38,1) that is almost twice higher than the indicators of control schools (+21,3).

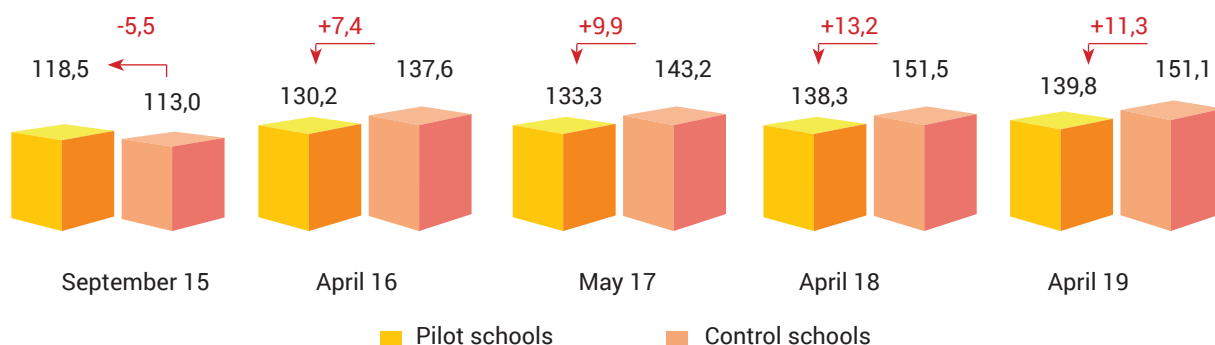
The average score in five diagnostic tests



The initial performance of pilot schools during the first diagnostic test (September 2015) were 5.5 points lower than the results of control schools. However, according to further

test results pilot schools showed progress in learning. The results were 74; 9.9; 13.2 and 11.3 points greater than those of control schools respectively.

Difference in average scores of control and pilot schools



These scores indicate that learning based on the renewed education content is a significant advantage for pilot school students. It also demonstrates a positive effect of new educational programmes, criteria-based assessment, and active learning on the development of knowledge and skills in pilot school students.

2. Progress by location

In terms of locations, the difference in the progress of pilot schools varies from 0.2 to 6.2 (in the range of 6.0 points), control schools - from 0.4 to 11.1 (in the range of 10.7 points), i.e. the indicators in rural and urban pilot schools are similar.

The comparative analysis of the progress in terms of the average score in rural and urban schools demonstrates a significant advantage of pilot schools.

	September' 15	April' 16	May' 17	April' 18	April' 19	Difference September 2015/April 2019	
Urban area							
Pilot schools	113,8	139,0	143,7	152,2	151,1	37,3	
Control schools	119,7	133,3	133,9	138,4	140,2	20,5	
Rural area							
Pilot schools	110,2	132,8	141,6	149,1	151,3	41,1	
Control schools	115,3	122,2	131,5	138,0	138,7	23,4	

3. Progress by school types

The results of five diagnostic tests showed that the progress of the average score in pilot schools was:

- +35.7 points in multi-grade schools;
- +39.1 points in mainstream schools;
- +35.8 points in lyceum schools;
- +38.4 points in gymnasium schools.

This indicator is **significantly lower** in control schools and is as follows:

- +27.6 points in multi-grade schools;

- +23.0 points in mainstream schools;
- +18.5 points in lyceum schools;
- +19.8 points in gymnasium schools.

In terms of schools, the difference in progress of pilot schools vary from 3.3 to 9.9 (in the range of 6.6 points), control schools - from 6.7 to 20.0 (in the range of 13.3 points). It indicates a decrease in learning outcomes between lyceums, gymnasiums, secondary and multi-grade pilot schools and higher quality of education in pilot schools.

	September '15	April '16	May '17	April '18	April '19	Difference September 2015/April 2019	
Secondary school							
Pilot school	112,7	136,3	143,8	152,1	151,8	+39,1	
Control school	115,4	126,6	128,7	136,2	138,4	+23,0	
Gymnasium school							
Pilot school	112,5	139,8	143,5	151,5	150,9	+38,4	
Control school	120,9	132,2	138,8	140,2	140,7	+19,8	
Lyceum school							
Pilot school	115,0	135,4	141,4	151,0	150,8	+35,8	
Control school	124,3	139,1	135,2	141,4	142,8	+18,5	
Multi-grade school							
Pilot school	111,7	129,9	138,2	143,0	147,4	+35,7	
Control school	108,5	119,1	125,9	131,9	136,1	+27,6	

4. Progress in terms of the language of instruction

The diagnostic test showed that the progress of the average score across pilot schools in terms of the language of instruction was as follows:

- +38.4 points with the Kazakh language of instruction;
- +38.0 points with the Russian language of instruction;

- +34.5 points with the Uyghur language of instruction.

In control schools:

- +21.4 points with the Kazakh language of instruction;
- +21.6 points with the Russian language of instruction;
- +19.9 points with the Uyghur language of instruction.

	September '15	April '16	May '17	April '18	April '19	Difference between September 2015/April 2019	
Kazakh							
Pilot school	113,2	138,5	143,1	151,5	151,6	+38,4	
Control school	118,6	127,7	132,7	136,9	140,0	+21,4	
Russian							
Pilot school	112,3	136,7	143,5	151,4	150,3	+38,0	
Control school	119,1	133,2	137,3	141,4	140,7	+21,6	
Uyghur							
Pilot school	125,8	131,6	138,1	156,5	160,3	+34,5	
Control school	115,5	130,2	120,8	133,2	135,4	+19,9	

5. Progress in terms of the minimum score

There was an increase in the minimum score in Grades 1 to 4:

- in pilot schools from 64 to 110 points (+46);
- in control schools from 81 to 97 points (+16).

Stable growth in the scores of low-performing pilot school students is an evidence of favourable conditions created to stimulate their learning.

Thus, as a result of introducing the renewed education content, a ceiling effect has been overcome by students, since they had no objectives other than teacher's expectations.

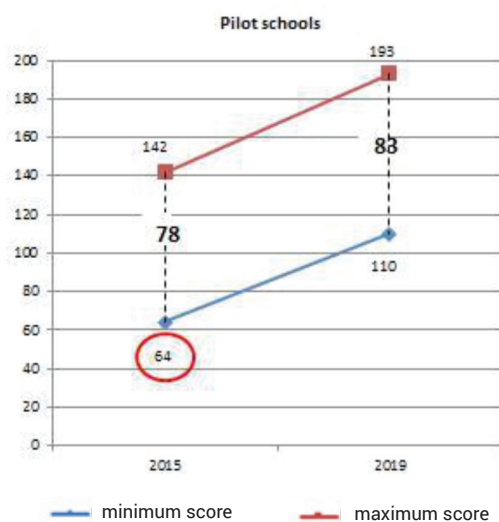
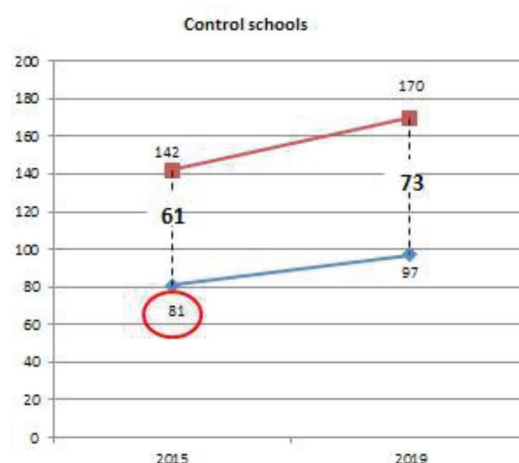
6. Difference between the minimum and maximum scores

The reduction of the difference between the minimum and maximum scores of students indicates the effectiveness and quality of education. These figures are widely used in international studies: the smaller the difference in the results of the weakest and strongest students is, the higher the quality of education is and vice versa.

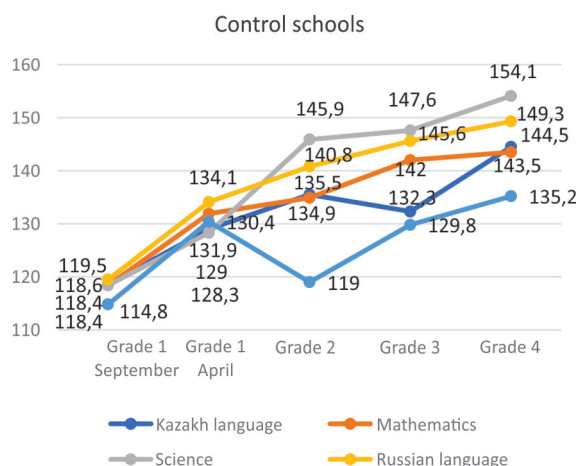
Following the test results:

- in control schools at the initial stage of learning in Grade 1 the difference was 61 points, and at the final stage of learning in Grade 4 it was 73 points, i.e. 12 points higher;
- in pilot schools at the initial stage in Grade 1 the difference was 78 points, at the

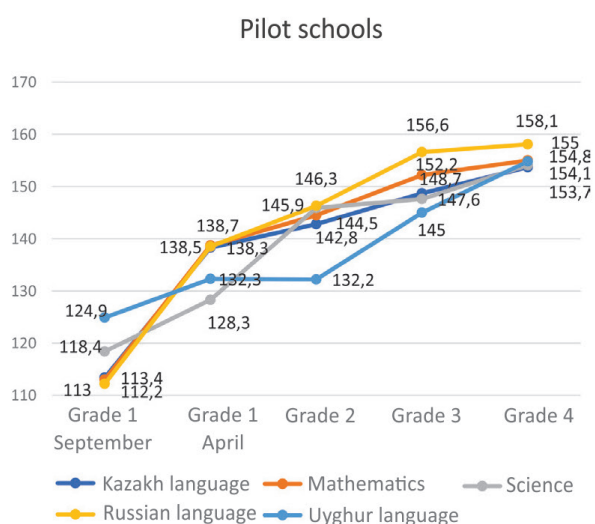
final stage in Grade 4 it was 83 points, i.e. 5 points higher.



Thus, the indicator across pilot schools is 2.4 times lower than the indicator across control schools. Additional measures at the system level are to be taken in this area.



Analysis of the average scores across the units of Mathematics, Science, World understanding, L1 (Kazakh, Russian, Uyghur) demonstrates a high degree of homogeneity and positive dynamics in the results of pilot school students.



The maximum average score across control schools (154.1) is close to the lower range of the maximum score across pilot schools (153.7-158.1).

In pilot schools, there is an increase in average scores across all units in all stages of diagnostic testing except for the indicators in the Uyghur language in Grade 2. The average scores across Grade 1 students at the initial

stage based on the diagnostic test results ranged between 112.2 and 124.9. Average scores of the final diagnostic test in Grade 4 ranged between 153.7 and 158.1.

In control schools, there is an increase in average scores across the units of Science, World understanding, Mathematics and Russian language at all stages of the test. The average scores of the first diagnostic test range between 114.8 – 119.5. The average scores of the final diagnostic test in Grade 4 across control schools are between 135.2 and 154.1.

The results of pilot schools demonstrate a more approximate distribution of scores across units, which is typical for processes with evenly distributed quality.

The analysis of five tests demonstrate a comparative advantage of pilot schools in terms of all tracked indicators and the growth of average scores according to the student ability scale:

- the progress of average scores is almost double the indicators of control schools;
- students' results demonstrate more significant progress of the average score than learning languages in control schools;
- there is a decrease in the difference between average scores of schools (multi-grade schools, mainstream schools, gymnasiums, lyceums, rural and urban schools);
- the results are approximately distributed across the test sections;
- the results of the completion of task examples demonstrate a stable advantage;
- the gap between the minimum and maximum scores is reduced.

These results confirm the effectiveness of the renewed education content and students' capacity to perform high in new programmes.

Therefore, the results of the 4-year monitoring of the renewed education content in pilot schools (2015-2019) indicate a significant increase in the quality of education as compared to control schools.

5.2. NIS SCHOOLS – REGIONAL METHODOLOGICAL CENTRES

As instructed by the head of state Nazarbayev Intellectual Schools in the regions have been appointed as Methodological Centres to support the renewed education content and teacher professional development.

In this regard, every NIS school is tasked to provide methodological support and consult teachers of mainstream schools on the renewed education content, contemporary teaching practices and learning approaches, and a new assessment system.

In the 2019-2020 academic year, NIS schools operate as Methodological Centres to support in the renewed education content and teacher professional development in accordance with the Action Plan approved by NIS Order N25/OD dated 16 July, 2019. The plan defines five priority areas of activity:

I. Providing school teachers with methodological support and interacting with training centres across all regions of the country.

II. Developing the potential of teachers and staff members of 1 020 leading schools of the country.

III. Post-course support for teachers and school leaders.

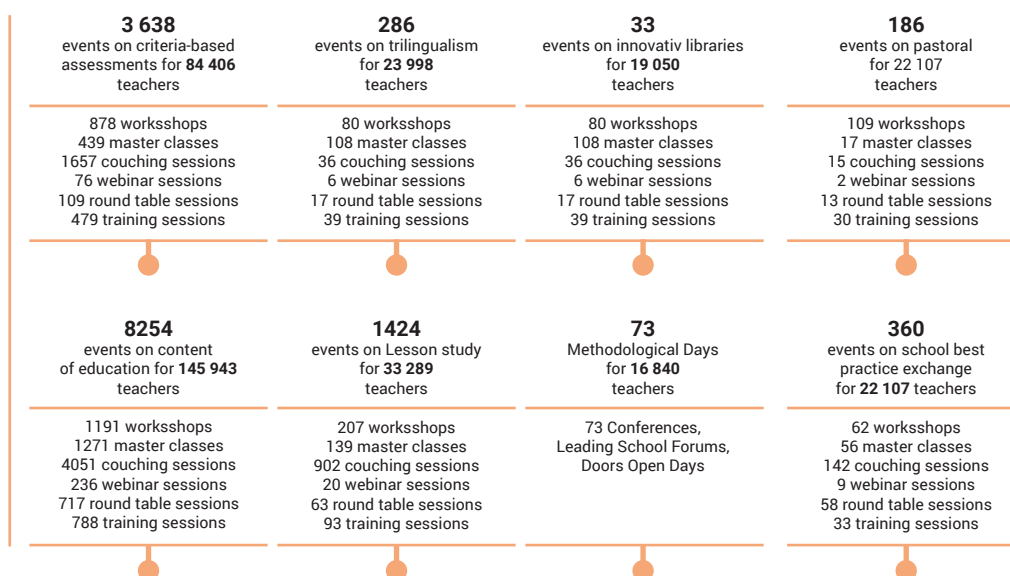
IV. Methodology day – presentation of innovative learning methods and approaches, new educational resources and etc.;

V. Forum of leading schools – exchange of experience and the best school practice.

To provide methodological support to teachers and identify teachers' professional needs and challenges, schools analyse information, develop learning and teaching materials, and do research.

In 2019, the Methodological Centres delivered **14 254** training sessions on the use innovative methods and practices to promote intellectual and personal development of students attended by more than 200 thousand teachers of the country.

The
methodological
centres
conducted
14 254 events
attended by **356 839**
participants





The following training sessions were delivered online:

- 10 online courses on the renewed education content;
- 208 webinars on contemporary

methodological support in all aspects of subject programmes (162 – subject content, 35 - assessment system, 9 - Lesson Study and Action research, 2 – exchange of school practices);

- 4 311 lesson observations with a quality feedback to support teachers in their daily practice and improve it.

Leading schools

In consultation with the Departments of Education in all regions and Nur-Sultan, Almaty and Shymkent some mainstream schools were appointed to be leading platforms for effective interaction of teachers and building professional teacher networks.

These leading schools aim to create conditions for professional networks of teachers to implement the renewed secondary education content and disseminate NIS experience.

Leading schools follow the Instructions on the organisation of activities to support the renewed secondary education content approved by the Letter N11-4/874 of MES dated 11 October, 2018.

The number of leading schools increases annually due to active work of leading teachers who take responsibility for the professional development of teachers' networks in their regions.

A territory-based scheme of partner schools assignment to leading schools has been developed (1 leading school per 8-10 partner schools).

№	Region	Total number of schools	Including	
			Leading schools	Partner schools
1	Nur-Sultan	85	24	61
2	Almaty	204	23	181
3	Shymkent	134	17	117
4	Akmola Region	560	76	484
5	Aktobe Region	399	86	313
6	Almaty Region	760	100	660
7	Atyrau Region	193	28	165

№	Region	Total number of schools	Including	
			Leading schools	Partner schools
8	East Kazakhstan Region	655	95	560
9	Zhambyl Region	445	44	401
10	West Kazakhstan Region	380	91	289
11	Karaganda Region	512	52	460
12	Kostanay Region	505	66	439
13	Kyzylorda Region	293	56	237
14	Mangystau Region	142	36	106
15	Pavlodar Region	362	26	336
16	North Kazakhstan Region	485	82	403
17	Turkestan Region	900	118	782
Total		7 014	1 020	5 994

Leading schools or schools supporting the renewed education content serve as support platforms.

Staff members of these schools take a leading role and provide methodological support to mainstream school teachers in the region.

CoE trainers' support: stages

Organisation and analysis	Meeting school staff, identifying the methodological potential of the school team through questionnaires and surveys, attending intra-school methodological events, analysing the school development plan, and assembling development teams (leaders) jointly.			
Training and support for LS	School administration training	Development (leader) team training	Training all teachers	Equipping with teaching aids
Interaction between LS and PS	Delivering individual or group training sessions (workshops, master classes, lesson observations) by PS teacher's requests			

In the period 2015 to 2019, 237 conferences and forums and 6 052 methodological and practical training sessions were held in leading schools.

Active work of teachers and school leaders who take responsibility for the professional development of teachers' community in their regions results in increasing number of leading schools. As of 1 September, 2019, there were 1 020 leading schools (14.5% of the total number of schools in the country).

Methodological teams of leading teachers of leading schools ensure continuous professional development of teachers in new leading schools. They organise useful practical activities such as:

- collaborative observation of lessons delivered by leading school teachers (attended by partner school teachers);
- providing feedback based on the lesson results;
- discussion of teachers' challenges and finding solutions;
- development and organisation of training sessions (master classes and workshops) by leading school teachers aimed at solving professional needs of teachers in new leading schools;
- providing recommendations for teachers in specific areas of professional development;
- repeated lesson observation to determine the changes in teaching and learning.

CoE branches provide methodological support in regions through a case study including diagnostic assessment checklists, surveys, and methodological resources that would be helpful for leading school teachers (visiting partner schools (including rural areas)) to deliver training sessions at a high professional level.

Leading schools are the main dialogue platforms for sharing ideas on the renewed education content at national and regional forums and conferences.

New leading schools are offered a new format of corporate training of school administration and leading teachers on management issues and organisation of learning and research activities in consultation with NIS teachers and administrators.



Leading schools have a good practice in building creative platforms to present the best lessons of leading teachers, successful school teams, and professional network communities.

Forums of leading schools increase the professional capacity of teachers and schools, develop teamwork skills and effective methods and approaches to teaching and learning. All these activities contribute to the development of leading school network.

Teachers who completed advanced training courses receive continuous post-course support, including feedback and consultations on the subject content, assessment system, etc.



Reference:

- CoE in Aktau organised III regional forum 'Leading school is a development platform within the renewed education content'. It was attended by leading school principals and coordinators, directors and methodology experts of Education Departments of Aktobe, Atyrau, West Kazakhstan, and Mangystau Regions.
- M. Utemisov West Kazakhstan State University in collaboration with CoE in Uralsk organised International research-to-practice conference 'Training specialists for Kazakhstani schools: culture of knowledge, renewed education content and practice'. About 320 teachers took part in the conference.
- I. Zhansugurov Zhetysu State University in collaboration with CoE in Taldykorgan organised Regional research-to-practice conference 'Introduction of innovative technologies in education is a key to quality education'.
- South Kazakhstan State Pedagogical Institute in collaboration with CoE in Shymkent organised I Regional forum 'Herald of the renewed education content' for leading schools in South Kazakhstan. More than 400 teachers attended the forum: school leaders and teachers, representatives of NIS, CoE, Departments of Education in Turkestan, Kyzylorda, Almaty and Zhambyl Regions.
- CoE in Kokshetau held the anticonference '5 steps to a leadership position' for leading school teacher and methodology experts from regional/city Education Departments of Akmola Region in the health centre 'Zvezdnyi', Burabay.
- Practice conference "Putting experience of leading schools in practice" was held for mainstream school teachers in North Kazakhstan Region.



Methodology Days became the most popular practice among regional teachers on different topics (lesson study, differentiated approach to learning, effective network interaction and etc.)





Methodology Day enables teachers to attend lessons delivered by their colleagues and receive a professional feedback. They can also participate in training sessions and master classes on the assessment system and subject content, hands-on sessions on research skills in Science and Mathematics and Arts and Humanities.

Reference:

Methodology Day on the renewed education content was held on 3 May, 2019, in Taraz to be attended by 358 educators (directors and staff members of Education Departments, Training Centres, mainstream schools). The event had four dialogue platforms: 'School methodological asset management', 'Network interaction of leading and partner schools in terms of teacher professional development', 'Management of school changes in the context of the renewed education content', 'Criteria-based assessment'.

Four groups worked simultaneously on each dialogue platform. The groups moved from one platform to another according to the Carousel technique to cover all the topics discussed.

At the end of the Methodology Day, the participants summarised and defined the further work in the context of the renewed education content.



Methodology Days and Forums of Leading Schools contributed to the development of a bank of successful teaching practices in each region to accumulate and distribute the best practices, useful resources and effective technology

The August meetings of teachers

Since 2017, it has become a tradition to organise annual breakout sessions with teachers of mainstream schools (over 7 thousand schools) on all subjects of the renewed education content just before the new academic year starts.

On 13-28 August, 2019, more than 30,6 thousand teachers of Grades 4, 9, 10 attended the Republican Forum of Education and Science held in pilot and NIS schools across 17 regions.

The main focus of the breakout sessions was on the characteristics of pre-school and Grade 4, 9, 10 subject programmes and criteria-based assessment in the context of the renewed education content.



2 048 training sessions were held including: 2 046 master classes, facilitated sessions and panoramas of the best school practices of 30 pilot schools. NIS staff members delivered **45 presentations** on the use of innovative approaches and learning techniques, characteristics of subject programmes in the context of the renewed education content.

One part of the August breakout sessions were training sessions for pre-school and primary school teachers from Zhezkazgan, Karaganda Region.

On 28 August, 2019, 44 master classes in 15 subjects were delivered in 2 languages for 410 pre-school and Grade 4 teachers from Zhairam, Zhezkazgan, Satpayev, Karazhal towns, Ulytau and Zhanaarka regions in the context of the renewed education content and criteria-based assessment. NIS organised an exhibition of textbooks and teaching materials.

In total, **1 422 NIS staff members and school teachers** were involved in the August meetings. Master classes and training sessions were developed and delivered by **1 041 NIS employees** (including **954 NIS teachers, 87 CoE trainers**), 243 pilot school teachers, 138 leading school trainers.

CoE trainers and teachers of NIS, pilot and leading schools were involved in the dissemination of experience.

CEP and CoE held exhibitions and sales of NIS teaching and learning materials and arranged information and education zones for downloading electronic materials and subject programmes available in 2 languages.

At facilitated breakout session 'Pilot school: 4-year progress and prospects', in Nur-Sultan leaders and teachers from 30 pilot schools discussed experience in piloting and implementing primary subject programmes and prospects for studying school practice.



Teachers and school leaders discussed the best practices of 30 pilot schools including the following issues:

- positive changes in the teaching practice;
- creating regional school teams to introduce innovations;
- positive changes in the attitude of students and their parents to the learning process;
- developing responsibility in the education community at all levels to introduce the renewed education content;
- building the pedagogic potential and introducing new techniques and approaches for the professional development of Kazakhstani teachers;
- academic and methodological support and consultation of the renewed education content.

On master classes and practical classes, teachers of mainstream schools received recommendations on how to implement the ideas and introduce formative and summative assessment in the learning and teaching process.

As a result, teachers:

- gained knowledge on the regulatory framework for introducing the renewed education content into the teaching practice
- acquired skills of developing short-term plans
- developed skills of involving students in the project and research activities;
- learnt to use modern methods and approaches to learning.

Session participants emphasised the importance of these issues for the quality implementation of the renewed education content and discussed the following issues:

- development of the mechanisms for disseminating the best teaching experience and practice;
- supporting personal and professional development of teachers;
- arranging activities to prepare teachers for implementing the renewed education content;
- active interaction of Departments of Education, Methodology services, mainstream schools, and teachers in the implementation of the renewed education content;
- creating conditions for teachers to use digital educational resources;

– using the online Educational Resource Portal at www.smk.edu.kz

These issues led to transformation, revision and development of teacher training programmes in the context of the renewed education content.

It was decided to create a cluster of leading schools out of mainstream schools that would serve as regional dialogue platforms on disseminating ideas of the renewed education content, using modern educational models and practices, collaborative work with school teachers, discussing the challenges in education, and training teachers to use learning approaches and techniques.

Summer schools

Since 2018 CoE has been providing support to teachers through Summer schools:

- Summer English School for subject teachers teaching in English;
- Summer School for teachers on criteria-based assessment.

The main objective of summer schools is to ensure deep understanding of methodology and develop teachers' professional skills through workshops, training sessions, and master classes.



In 2019, Summer English School for Teachers was organised for the second time. 903 teachers of Physics, Chemistry,

Biology, and Computer Science attended the summer school and studies English and CLIL techniques.

The Summer School Programme is designed to develop teachers' language competencies (speaking, listening, reading and writing skills), and effective lesson management skills using CLIL and active learning methods and techniques.

Summer School members practiced developing lesson plans and assessment activities in English based on acquired knowledge and new vocabulary.

On 12 – 23 August, 2019 NIS organised Summer School on Criteria-based Assessment in all CoE branches across the country.

In total, 14 368 teachers of mainstream schools attended the Summer School. These were subject teachers of Kazakh language, Russian language, English, Mathematics, Physics, Biology, Geography, Computer Science, History, and Chemistry:

– Cohort 1 – 12-16 August 2019 – 7 134 teachers;

– Cohort 2 – 19-23 August 2019 – 7 234 teachers.

302 CoE trainers and mainstream school teachers who completed trainer training courses were involved in delivering classes during the Summer School.

Participation in the Summer School was free of charge.

The teachers improved their skills of developing differentiation activities, assessment criteria and tools in the context of their subjects.

Upon completion, every Summer School participant received an electronic certificate with a QR code that can be used to get full information about a trainee at db.cpm.kz.

Teachers appreciated the idea of the Summer School, highlighted its practical significance and suggested to continue this work during the school holidays.

**The number of teachers attending the Summer School
on criteria-based assessment**

№	Region	Total number of participants	Including	
			Cohort 1 (12-16 August)	Cohort 2 (19-23 August)
1	Nur-Sultan	721	360	361
2	Almaty	1 015	504	511
3	Akmola Region	795	404	391
4	Aktobe Region	889	410	479
5	Almaty Region	1 350	652	698
6	Atyrau Region	521	260	261
7	East Kazakhstan Region	838	426	412
8	Zhambyl Region	838	438	400
9	West Kazakhstan Region	928	410	518
10	Karaganda Region	847	418	429
11	Kostanay Region	506	264	242
12	Kyzylorda Region	763	373	390
13	Mangystau Region	690	345	345
14	Pavlodar Region	719	348	371
15	North Kazakhstan Region	1 020	560	460
16	Shymkent, Turkestan Region	1 928	962	966
Total		14 368	7 134	7 234

Those teachers who attended the Summer School on assessment received practical recommendations on how to design differentiation activities, develop assessment criteria and tools, and improve student motivation, self-regulation and participation.

Summer school has become an effective learning model that provided teachers with knowledge and skills in criteria-based assessment prior to a new academic year.

5.3. DISSEMINATION OF EXPERIENCE ACROSS THE COUNTRY

In the rapidly changing society and economy, all components of educational system (national standards, teachers, schools and etc.) must be 'adjusted' to accept the changes and become agents of innovations. Experts say the education system of Kazakhstan is taking significant steps towards the OECD standards. Methodological and practical training activities held as part of the

Memoranda signed, get a positive feedback from teachers:

Reference:

NIS signed Memoranda on cooperation with

- Akimats of 17 Regions;
- Ministry of Culture and Sports of Kazakhstan (Kazakh National Academy of Choreography, 9 Art Schools);
- Ministry of Defence of Kazakhstan (National Defence University named after the First President of Kazakhstan Yelbassy, 4 Zhas Ulan schools);
- L. Gumilyov Eurasian National University;

- Taraz State Pedagogical University;
- Pavlodar State Pedagogical University;
- 2 Republican Physics and Mathematics Schools.

Cooperation with Universities and Colleges

Cooperation with higher and secondary professional pedagogical institutions on training teachers in terms of the renewed content of education and a new format of teaching practice is a strand of NIS experience dissemination.

In 2015-2019, 3 121 staff members (in 2019 - 860) of pedagogical HEIs (1309) and colleges (952) completed the professional development course on the renewed education content.

Nº	Region	HEI	COLLEGE
1	Nur-Sultan	-	Arts College N32, Nur-Sultan city
2	Almaty	Kazakh National Women's Pedagogical University	Kazakh State Humanitarian and Pedagogical College No.1, Almaty
		Abay Kazakh National Pedagogical University	
		Ablai Khan Kazakh University of International Relations and World Languages	Almaty State Humanitarian and Pedagogical College No.2
3	Akmola Region	Sh. Ualikhanov Kokshetau State University	Zh. Musin Kokshetau Pedagogical College
			Pedagogical College, Shchuchinsk
4	Aktobe Region	A. Zhubanov Aktobe Regional State University	Aktobe College of Humanities
5	Almaty Region	I. Zhansugurov Zhetysay State University	Yessik College of Humanities and Economics
			Zharkent College of Humanities
6	Atyrau Region	Kh. Dosmukhamedov Atyrau State University	K. Dutbayeva Atyrau College of Humanities
7	East Kazakhstan Region	S. Amanzholov East Kazakhstan State University	M. Auezov Pedagogical College, Semey
		K. Shakarim State University, Semey	East Kazakhstan College of Humanities, Ust-Kamenogorsk
8	Zhambyl Region	Taraz State Pedagogical University	Abay Zhambyl College of Humanities
9	West Kazakhstan Region	M. Utemisov West Kazakhstan State University	Zh. Dosmukhamedov Higher Pedagogical College, Uralsk

Nº	Region	HEI	COLLEGE
10	Karaganda Region	Ye. Buketov Karaganda State University	Karaganda College of Humanities Zhezkazgan College of Humanities A. Kunanbayev Saransk College of Humanities
11	Kostanay Region	U. Sultangazin Kostanay State Pedagogical University Y. Altynsarin Arkalyk State Pedagogical Institute	Kostanay Pedagogical College Y. Altynsarin Rudnyi College of Humanities and Social Sciences N. Kulzhanova Torgay College of Humanities
12	Kyzylorda Region	Korkyt Ata Kyzylorda State University	M. Mametova Kyzylorda College of Humanities
13	Mangystau Region	Sh. Yessenov Caspian State University of Technology and Engineering	Murn zhyrau Sengirbekuly Mangystau College of Humanities Beineu College of Humanities and Economics
14	Pavlodar Region	Pavlodar State Pedagogical University	Akhmetov Higher Pedagogical College, Pavlodar
15	North Kazakhstan Region	M. Kozybayev North Kazakhstan State University	M. Zhumabayev Petropavlovsk College of Humanities
16	Turkestan Region	South Kazakhstan State Pedagogical University	G. Muratbayev Zhetysai College of Humanities Turkestan College of Humanities
Total:		19 HEIs	26 colleges

According to the Actions Plan for Development Strategy implementation, NIS provides methodological support and **consultations to teacher training universities and colleges** of Kazakhstan.

Cooperation between NIS and HEIs is implemented through online lessons and webinars, master classes, subject weeks, Open Days, research-to-practice conferences, meetings with the teaching community, social projects and etc.

NIS provides methodological support to teachers who completed multi-level training courses and primary school training programmes in terms of the renewed education content.

The cooperation between NIS and teacher training HEIs and colleges has significantly increased due to the increased number of teachers trained and the introduction of the

renewed education content in mainstream schools and renewed curricula of HEIs and colleges.

Zh. Dosmukhamedov Higher Pedagogical College, Uralsk

In August 2019, NIS started implementing a joint project with Zh. Dosmukhamedov Higher Pedagogical College, Uralsk, 'Modernisation of the education content and organisation of the educational process in Zh. Dosmukhamedov Higher Pedagogical College' with focus on Primary Education.

One of the large-scale projects implemented by CEP in 2019 was the first republican project on developing a new strategy for pedagogical colleges.



As part of this project, 60 workshops were delivered by more than 70 NIS teachers and over 50 scientific consultants. In these workshops, the trainees developed:

- 2 model course programmes and 2 experimental educational programmes;
- 108 course programmes in the Kazakh and Russian languages.

The programmes integrated the best international and national experience and comply with the requirements of the model course plan on Primary Education specialty.

To determine the content of course programmes, NIS analysed the content of model course programmes currently used by Zh. Dosmukhamedov Higher Pedagogical College, works of ethnopedagogy experts, modern approaches to teaching, Primary Education Programmes practiced in the universities of Finland, Singapore, the USA, Canada, Australia, Spain, China and England.

The developed experimental course programmes have the following specific features:

1. Course programmes for general education disciplines have been developed in accordance with the renewed standards of basic secondary and general secondary education. They build on the value-based, activity-based, integrative and communicative approaches. **The content of the course programmes for professional modules is aligned with the expected outcomes and the renewed State Compulsory Standard for Primary Education.** All course programmes have been supplemented with new units and themes.

The experimental programme also provides for the study of new disciplines such as: *Methods of teaching Science and Methods of teaching World understanding, Digital literacy, Research in Education, Pedagogical Design, Introduction to career, Criteria-based assessment, Monitoring student achievements, Development of Assessment Tools and Analysis.*

On 26-27 August, 2019, CEP organised a workshop delivered by international experts Peter Mehisto, PhD, University College London, and Joanna de Brito, certified PYP (Primary Years Programme) teacher for the College teachers on the modern approaches to teaching languages and non-language subjects in primary school.

72 teachers of the College were trained. Teachers were introduced to the modern methods of teaching primary school children and the principles of planning, lesson management, differentiation and inclusive education. They studied different strategies for developing students' language skills and vocabulary through reading.

The experimental educational programme and some special disciplines were reviewed by the OECD international expert Phil Lambert against the criteria: rigour, coherence, focus and alignment. The review included:

- benchmarking of the College course programmes with the programmes used in leading OECD jurisdictions: Singapore, Finland, Canada (Ontario/British Columbia), Hong Kong, New Zealand and Australia;
- evaluation of teachers' professional development goals, the course programmes and relevant learning materials;
- defining the gaps and unnecessary duplication;
- evaluation of the relationship between the theory and practice in subject learning materials.

To provide teachers with methodological support, an Experimental platform was created at ERP. It includes course programmes and methodological recommendations. It is supplemented with audio and video materials, teaching materials, international reports and research in education. A discussion platform was created for the College teachers to provide answers to existing issues of concern.

Another important aspect of this project is the monitoring of experimental educational programmes. The aim of the monitoring is to identify positive factors and issues that arise as a result of introducing educational programmes.

The whole monitoring process included methodology development, defining problems and focus areas, formulating the monitoring aims and objectives, development of the monitoring schedule, plan of actions, quantitative data collection tools (questions for an online survey) and building a monitoring team.

L.N. Gumilyov Eurasian National University

On 26 October 2018, NIS and L.N. Gumilyov Eurasian National University signed a Memorandum of Cooperation.

As part of this collaboration, CEP developed 3-year educational programmes for students of 'Mathematics' speciality.

The changes introduced to the programmes were discussed at the meetings of the working group represented by ENU teachers and NIS experts. The educational programme for Mathematics speciality was approved by ENU Academic Council.

CEP developed the following materials: Regulations on Teaching Practice, a set of learning materials for teaching practice, and other relevant documents.

Taraz State Pedagogical University

Taraz State Pedagogical University actively introduces new methods of training teachers and exchanges experience with the staff members of NIS schools.

On **16 January, 2019**, NIS representatives met the leaders of Zhambyl Region, the faculty and administration of Taraz State Pedagogical University to get familiar with the university and establish partnership relationships.

They discussed the changes required and new ideas that may be introduced to the education system. Special attention was paid to improving the quality of education, changing the approaches to management of teaching practice and the content of educational programmes.

U. Sultangazin Kostanay State Pedagogical University

On 18 January, 2019, NIS and U.Sultangazin Kostanay State Pedagogical University concluded an agreement on training and dissemination of NIS experience. The agreement includes the following areas of cooperation:

- professional development and training of the faculty;
- exchange of the best teaching practice with schools;
- development of a new design for educational programmes considering the renewed content of secondary education;
- mutual scientific and methodological consulting and support;
- arrangement of teaching internships of students in pilot and NIS schools.

Collaborative activities have been identified on providing scientific and pedagogical support to NIS teachers, studying the best practice and disseminating NIS experience, using NIS innovative approaches to teaching and learning in teacher training.

In total, 25 training sessions were delivered. At the meetings with teachers of NIS PhM Kostanay, students developed their skills of developing short-term plans, assessment criteria and descriptors, and practiced the basic approaches to writing summative assessment tasks for units and terms.

CoE and Pedagogy Department of the university jointly developed and introduced the programme 'Basics of teacher's reflection' for the Young Teacher School in NIS PhM Kostanay. The programme consists of 34 hours and includes the project design.





INTERNATIONAL COOPERATION

NIS experience is actively disseminated in the global educational environment:

1. NIS is a national coordinator representing Kazakhstan in the OECD Education 2030 project. Teachers and students attended the meetings of the OECD working group focused on The Future of Education and Skills 2030 Project. In 2019, the meetings took place in Vancouver, Canada and Seoul, South Korea.

2. In 2019, at the international conference 'Crafting Sustainable Pedagogies for Teaching and Learning' held in Amsterdam, Holland, NIS trainers shared their experience with the participants from 46 countries and delivered 2 master classes.

3. NIS has successfully participated at the international educational conference ED Crunch Moscow (Moscow, Russia) for three years.

Reference:

EdCrunch is a global conference that aims to ensure complete and comprehensive understanding of digital innovations, encourage to actively apply technology in solving complex educational tasks to transform the future of teaching and learning.

EdCrunch annually brings together the leading experts in educational technologies – teachers, educators, leaders of educational institutions, investors, entrepreneurs, and those who are interested in the future of education.

On 10-11 June, 2019, CoE staff members took part in the XI International EdCrunch IT-forum held in Khanty-Mansiysk (Russia) and organised training sessions for leaders and teachers of educational institutions from BRICS and SCO countries on the following themes:

- 'School system for advanced training. How to design and manage the processes of developing professional skills of teachers: research, coaching, mentoring, network community' (workshop);

'Change of the educational paradigm: how to make teaching effective and engaging?'

The 6th international conference EDCRUNCH 2019 was held in Moscow (Russia) on 1-2 October, 2019 (<https://2019.edcrunch.ru>). The central theme was 'Inflection point: from human capital to human potential'. More than 4 000 participants and online visitors



from 16 countries and 300 speakers attended the conference. In 2019, NIS shared the experience of Kazakhstani teachers in lesson study and use of differentiated approach to teaching. CoE delivered a master class 'Individual approach: How to Involve Each Student in Effective Learning?'

At the master class, the trainers Sapura Zholdasbayeva and Yuliya Melnikova demonstrated the pedagogical approaches used by Kazakhstani teachers in their practice to allow every student to succeed in the learning process.

The master class aroused the interest among the conference participants due to its practicality. Participants also appreciated the effective delivery of the material and practicality of the given case studies that provoked an interesting discussion of the participants.



4. On 7 October, 2019, a delegation of teachers and education specialists from Khanty-Mansi Autonomous Okrug - Yugra signed a Memorandum of Cooperation between NIS and Department of Education and Youth Policy of Khanty-Mansi Autonomous Okrug - Yugra. The colleagues from Yugra became familiar with the history, mission and main activities of NIS schools.

They also expressed their readiness for

cooperation on the professional development of teachers. In this regard, NIS plans to develop teacher training programmes, to train trainers for the project and provide methodological support of the teacher training project. 5. NIS schools of Uralsk and Nur-Sultan established cooperation with Tatarstan in student exchange as part of the project 'Partner schools'.

Every year teachers and education specialists from Tatarstan attend the International NIS conference in Nur-Sultan and take part in master classes and training sessions, share experience with their colleagues from other countries.

On 16 January, 2019, Rafis Burganov, the Minister of Education and Science of Tatarstan, met the delegation from Kazakhstan in Kazan.

'We are already adopting the experience of Kazakhstan and planning to establish new schools. It is mostly due to the experience of NIS schools.' - Rafis Burganov said.

Reference:



Representatives of the Ministry of Education and Science of Tatarstan visited Uralsk. 'It was very useful for us. I believe these visits will become traditional for our specialists. We also made efforts so you could evaluate our educational institutions. Although there is nothing that can surprise you, since we have seen very impressive schools of yours,' – said Deputy Prime Minister to the representatives of Kazakhstani delegation.

In an interview to mass media, the Minister noted that the cooperation between Tatarstan and Kazakhstan was highly appreciated. 'I hope the cooperation between organisations, specialists, ministries and departments will be continued', - he said.

6. On 25 February, 2019, the Chairperson of NIS Board and staff members met the representatives of the European Union as part of the project 'Support to the Education sector in Turkmenistan'.

The EU was represented by Johannes Stenbaek Madsen, the Head of Cooperation Department, and Silvia Pietropaolo, Project Manager. The aim of the visit was to get acquainted with NIS activities. During the

meeting they saw the presentations about NIS schools and their activities.

On 13-19 May, 2019, a delegation of representatives of the Ministry of Education and Training centres for university and school teachers from Turkmenistan (10 people) visited Kazakhstan (Nur-Sultan).

At the request of the delegation from Turkmenistan, the following activities were planned: improving the content of education, innovative approaches to professional development of school leaders and teachers, innovative methods and technology of teaching, criteria-based assessment and etc.

Turkmenistani teachers are interested in the experience of Kazakhstan in creating innovative schools and the professional development of NIS teachers.

NIS Centres presented the experience in using concept-based approaches to secondary education, development of criteria-based assessment, teacher professional development, using innovative methods and active learning.

The delegates met the representatives of MES, visited NIS schools in Nur-Sultan, became familiar with the activities of Nazarbayev University, 2 colleges and secondary school No.73 in Nur-Sultan.

7. On 24-25 October, 2019, NIS held the XI International Research-to-Practice conference 'Teachers changing the world of schooling'. More than 2 400 participants from 17 countries attended the Conference. The agenda included the issues of concern of teachers worldwide – teacher – student cooperation, global competencies, life-long learning of teachers, the content of education and assessment, creating a favourable learning environment, developing emotional intelligence and etc.

The Conference included three plenary sessions, 12 master classes, 24 network sessions delivered by more than 100 speakers. Participants attended 6 symposiums to discuss the international TALIS 2018 results on Lesson Study and Action Research, the renewed education content, the exhibition of educational resources and other activities.

8. In 2019, NIS in cooperation with the UN Population Fund launched a project to introduce the child reproductive health issues to the learning process.



As part of this project, the following learning materials on the promotion and preservation of sexual and reproductive health were reviewed in the Kazakh and Russian languages:

- short-term plans were supplemented with additional activities and questions for classroom discussions;
- presentations for lessons were extended by adding theoretical information and practical recommendations;
- didactic materials were supplemented with activities and texts, providing references to the relevant sources, including different charts and tables reflecting the issues of preserving reproductive health.

To sum up, the total of 1 401 learning materials in the following subjects were reviewed: Biology, Chemistry, Kazakh Language, Kazakh language and literature, Kazakh Literature, Russian Language, Russian Language and Literature, Russian Literature, English Language, Physical Education.

Moreover, Reproductive Health section of ERP includes the following documents of the UN Population Fund to be used as additional sources of information in the development of authentic and practical activities:

- International technical guidance on sexuality education.
- Sample survey on violence against women (Kazakhstan).
- Social studies on the reproductive health of adults and young people aged 15-19, their sexual behaviour and access to reproductive health services and information.
- Valeology course programme for college students on sexual and reproductive health.
- Valeology textbook for college students

on the sexual and reproductive health.

- Teaching aid in Kazakh and Russian on the introduction of sexual and reproductive health component in Valeology.

The aim, relevance, progress and results of the project were presented in the video at the August Conference 2019 to educators of the country.

ERP becomes an information and methodological database for teachers, a platform for their professional development and cooperation. On the website every teacher

can find something that may help to realise own educational, professional and creative potential.

The current work on updating website content is the first step of methodological support to teachers. In the future, upon the introduction of all subject programmes (Grades 1-11), it is planned to transform the website into the online community that would contribute to the professional development of each teacher across the country.

CONCLUSION

The dissemination of NIS experience has become a new stage in the development of education characterised by shifting to a completely new conceptual approach to the learning process within the renewed content of education, introduction of a new assessment system, use of modern methods and approaches to learning focused on the development of a student who is a patriot of our country and a highly-demanded professional in the future.

20 NIS schools internationally recognised and accredited by CIS (Netherlands) aim to disseminate their experience by providing methodological and practical support to mainstream school teachers across the regions.

Dissemination of pastoral work experience builds on the State Programme for the Development of Education and Science of Kazakhstan for 2016-2019. It is implemented through two socially significant projects 'Bow to the Motherland' and 'Shanyrak'.

Technical creativity, the 'Robotics' course in particular, gained significant development and popularity among students with the introduction of the renewed content of education.

One of the effective tools for methodological support of teachers is ERP available for Grade 1-10 teachers of mainstream schools.

1. NIS plans the following activities until 2023:

1. to increase the number of leading schools up to 2 000. To focus Leading schools on the dissemination of innovative learning methods and technology, and the best teaching practice;

2. to organise 214 Consultation Services for teachers of mainstream schools and parents across the regions (based on existing Methodology Offices in regional, district, and city Departments of Education);

3. to create project teams with the faculty of HEIs (to develop and improve educational programmes in pedagogical specialties) and colleges (to develop Career Orientation educational programmes that would equip students with one vocational profession

and give an opportunity to pursue further education);

4. to establish a National Centre for Mainstream School Accreditation to disseminate NIS experience of international accreditation and teachers' certification;

5. to improve the system of teacher professional development by:

- developing training courses on school practice research at the request of teachers, schools and other educational organisations;

- delivering customised training courses considering the professional needs of teachers and development of tasks and activities for assessing functional literacy;

- studying professional needs of teachers and educators;

- studying the efficiency of teacher training;

- developing a bank of the best teaching practice to provide teachers with methodological support and improve the quality of education;

- proving continuous methodological and resource support to teachers through ERP;

- creating networks of school leaders, primary teachers, and subject teachers to let them generalise and exchange experience;

6. to participate in international projects and expert groups to disseminate the experience;

7. to collaborate with international partner schools, international and intergovernmental institutions to disseminate the experience;

8. to render consultation services to pre-school institutions, colleges, HEIs in the country and abroad;

9. to conduct applied research in secondary education.

According to the Address of the President K. Tokayev to the people of Kazakhstan on 2 September, 2019, NIS developed a new educational project 'Rural school' aimed to develop rural schools by improving their infrastructure and building creative capacity of teachers. In January 2020, B. Saparbayev Deputy Prime-Minister of Kazakhstan approved

the project and instructed MES to start piloting the project in Karaganda, Kyzylorda, Akmola and East Kazakhstan Regions.

11 schools of the four regions were selected for this project.

The project aims to analyse the strengths and weaknesses of schools, determine the needs and professional challenges of teachers

and evaluate the classrooms and school infrastructure.

Based on the study results, it is planned to deliver training sessions for rural teachers intended to increase their creative potential.

Improving the infrastructure of rural schools will be the responsibility of local executive bodies.

Appendix 1

**Winners of
the Republican Robotics Olympiad 2019**

Nº	Place	Team	Participants	School	Trainer
Regular Elementary					
1	I	RIG Elementary	Sofya Kokorina Georgii Shilyayev	NIS Kokshetau	K. Kanapov
2	II	Champions	Marat Kazkenov Ali Umargaliyev	'Robot League' - Robotics Club, Nur-Sultan	Olzhas Aitzhanov Ramazan Balguzhin
3	III	Pirates	Abilmansur Zhunisenov Ansar Bashirov	'Station of young technicians" under the Akimat of Ust - Kamenogorsk	Duman Shaker
Regular Junior					
4	I	FLAME	Asset Zhumin Dastan Tynyshtyk	NIS Uralsk	N. Dagarov
5	II	NISR_Mobile Extremals	Aisha Zholamanova Arsen Yessengaliev	NIS Uralsk	N. Dagarov
6	III	NISR_Hightech	Sanzhar Serik Miras Imangali	NIS Uralsk	N. Dagarov
Regular Senior					
7	I	ATOM	Nikita Noskov Danil Prokhorenko	NIS ChB Almaty	A. Noskov N. Dosbolov
8	II	Qyzylorda	Vladimir Usoltsev Nurbol Zhaksylyk	NIS ChB Kyzylorda	S. Akhmetov
9	III	Robobot 2.0	Arnur Orazgul Bekbol Bolatov	NIS Uralsk	N. Dagarov
Open Elementary					
10	I	Scanbot	Aida Abileva Andrei Dorokhin	Comprehensive specialized modular school N11, Pavlodar	R. Sadykov
11	II	NGS speed	Alisher Magambet Danial Sydykov	New Generation School, Almaty	A. Mukhamedzhan
12	III	Guesser Robot	Nikita Pak Angelina Dolzhenko	NIS PhM Taldykorgan	N. Avdyunin
Open Junior					
13	I	IO-BOT ROBOTICS	Chingiz Kuanyshbai Mikhail Dudinov	NIS ChB Almaty	A. Kalaibek
14	II	Pilots	Saken Daurenbek Aidamir Bolat	IT lyceum-school Kokshetau	M. Kulbayev
15	III	NextIn	Alina Tsai Zhanadil Shakarim	Regional specialized boarding school for gifted children 'Murager', Karaganda	A. Zhuzbayev

Open Senior					
16	I	ZIGGURAT	Daniil Filimonov Elina Pak	Composite team: NIS PhM Taldykorgan, Centre for the Intellectual Development of Children NEXTROBOT, Taldykorgan	N. Avdyunin
17	II	<bastau>	Rakhat Aitzhan Shyryn Ospanova	NIS PhM Nur-Sultan	S. Nurgaliyeva
18	III	YA-vation	Yeskendir Asankul Asylbek Sakenov	NIS ChB Almaty	M. Musayev Ya. Shakan
WRO Football category					
19	I	GREATGENZ	Zhangir Bayanov Kaisar Alibekov	NIS Uralsk	N. Dagarov
20	II	FC ArtaRobotics	Sergazy Taituyev Yerkebulan Kenzhebek	NIS ChB Petropavlovsk	A. Ismagulv
21	III	Eibar	Daniil Okrug Azat Akhmetkali	NIS PhM Kostanay	A. Shertzer
Jasampaz category (Smart City - Arduino)					
22	I	FireFinder	Aidana Kenzhebayeva Samal Ali	NIS PhM Aktobe	B. Shokanov
23	II	<brainsoft/>	Rakhat Khamitov Zharken Utegenov	NIS PhM Kokshetau	K. Kanapov
24	III	Winner	Alisher Aliyev Yeldar Shayakhmet	NIS PhM Nur-Sultan	S. Nurgaliyeva
Nominees:					
25	First Step Experience in support of rural schools	RoboReBoot	Zhiger Galymbekuly Yernar Adalbekuly	Zhylandy Secondary Lyceum-School, Almaty Region	N. Avdyunin
26	Creativity Award	Phoenix	Rysgul Serikbayeva Dariya Baigozhina	NIS ChB Pavlodar	N. Arystanbekkyzy
27	Girl power	Tensors	Yerkezhan Akhmadiyeva Dariya Uisengali	NIS PhM Semey	B. Orynbayev
28	Engineering Simplicity Honors Award	Sapper_Bot	Dilnaz Zhemisbek Madina Aglamkhan	NIS PhM Taldykorgan	N. Avdyunin
29	Team scoring	West Kazakhstan Region		Winner's Cup	



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