Nazarbayev Intellectual Schools NIS

ANNUAL REPORT

NAZARBAYEV INTELLECTUAL SCHOOLS
Autonomous Educational Organisation

2017

PART 1

Report on the work of «NAZARBAYEV INTELLECTUAL SCHOOLS» AEO

CONTENTS

ADDRESS BY THE NIS CHAIRPERSON

DEAR COLLEAGUES, PARENTS, AND PARTNERS!

Thank you for your interest in the NIS AEO Annual Report for 2017. Last year was indeed a great success, with not a single goal left unachieved and NIS growing ever more efficient.

I am happy to say that so far ten NIS schools - in Astana (2), Atyrau, Aktobe, Kokshetau, Kyzylorda, Semey, Ust-Kamenogorsk, and Shymkent (2) - have received Council of International Schools accreditation. A total of 2248 NIS students were prizewinners in national and international olympiads and scientific contests.

Around 99.8% of our graduates matriculated at a national and international universities.

NIS also took part in the Human Resource Development educational fair held at the 14th Russia-Kazakhstan Interregional Cooperation Forum in Chelyabinsk. This Forum was a significant event, serving as a platform for a meeting between President Nursultan Nazarbayev and President Vladimir Putin.

" https://youtube/b30lk329k4A

2017 saw many an important event, one of them being a meeting of the Supreme Board of Trustees of Nazarbayev University, Nazarbayev Intellectual Schools, and Nazarbayev Foundation chaired by President Nursultan Nazarbayev. At that meeting, the Board addressed current organisational issues, discussed the future direction of NIS, noted the effectiveness of the 20 NIS schools, and charged us with a number of tasks.

"http://primeminister.kz/ru/news/obrazovanie/nursultan-nazarbaev-prinyal-uchastie-v-zasedanii-visshego-popechitelskogo-soveta-avtonomnih-organizatsii-obrazovaniya-14666

NIS has devoted considerable efforts to the dissemination of its experience to the national system of education. On 1 September 2017, the new curriculum, assessment system and resources (literally, content of education) developed by NIS was introduced countrywide in grades 1, 2, 5, and 7. A total of 29,306 teachers received specialised training, in order to ensure the successful implementation of the educational reforms undertaken.

Full information on the work conducted by NIS in 2017 can be found in the two parts of the present report.

In 2018, we are planning to make a new quantum leap forward by focusing on sustainable development.

Finally, I would like to express gratitude to NIS employees and partners for contributing to the development of NIS. May luck accompany you in your journey along the path of sustainable development!

Kulyash Shamshidinova


LIBRARY
WORLD BOOK

KEY EVENTS AND PERFORMANCE INDICATORS

May

The Head of State, Nursultan Nazarbayev chaired a meeting of the **Supreme Board of Trustees** of 'Nazarbayev University', 'Nazarbayev Intellectual Schools', and 'Nazarbayev Foundation' Autonomous Educational Organizations.

January-December

By receiving **CIS-accreditation,** ten NIS schools demonstrated that the education they provide is high-quality, and of an international standard.

February

NIS students staged 'Heirs of the Great Steppe', a creative performance dedicated to the 25th anniversary of Kazakhstan's independence.

March

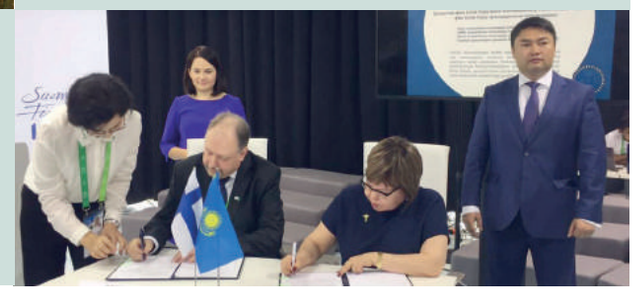
Prime Minister Bakhytzhan Sagintayev visited NIS Semey

June

NIS held EXPO Young Ambassadors, a summer-school event for 100 comprehensive school students from all over the country.

July

NIS signed a Memorandum of Cooperation with Hamuk University of Applied Sciences (Finland) at EXPO 2017



August

NIS Ust-Kamenogorsk opened a new campus.

October

NIS hosted the IX NIS International Research-to Practice Conference entitled 'Values, Well-being and Innovations for the Future of Education'

October

One thousand five hundard people took part in a cycle festival as part of the 'A Bicycle is the Key to Good Ecology and Health', a grant project run by UNDP, the Global Environment Facility, and the Akbota Public Fund.

November

NIS participated in the XIV Russia-Kazakhstan Interregional Cooperation Forum, which served as a platform for a meeting between Nursultan Nazarbayev and Vladimir Putin.

November

Askar Mamin, the First Deputy Prime Minister of Kazakhstan, and Igor Shuvalov, the First Deputy Prime Minister of Russia, made a visit to NIS Aktobe in the framework of the Kazakhstan-Russia Intergovernmental Commission meeting. Cooperation meeting.

November

Members of the Senate Committee on Social and Cultural Development visit NIS Astana PhM.

December

. The Kazakh-British Technical University granted NIS graduates the right of direct admission to the second year of university studies.
National universities recognise the upper secondary subjects taught at NIS as completed university credits.

The total student population of the 20 Intellectual Schools was **14 837**

The average IELTS score of NIS graduates is **5,9**

with 18% of graduates scoring a **7** or above.

2 248 (61.4%) students were prizewinners in national and international olympiads and contests.

2 879 **teachers** are employed at Nazarbayev Intellectual Schools, among them

2 684 **Kazakhstani teachers** and **195** – **international teachers.**

4 PhD holders,

22 Candidates of Sciences,

719 teachers with Master's degree.

6 teacher-researchers,

243 teacher-experts,

892 teacher-moderators,

1 342 teachers and **522** teacher-interns.

562 **trainers**, including **112** **team members,** who underwent training programs in 2017.

404 **graduates** were admitted to university:

323 **to national** universities

and **81** – to foreign ones.

340 (84%) students were awarded a university scholarship.

Two teachers - winners of national "Teacher of the Year - 2017" competition:

Bekzhan Kopbossynov, a Kazakh Language and Literature teacher at Nazarbayev Intellectual School of Physics and Mathematics in Shymkent;

Nurym Nurgaliyev, a Biology teacher at Nazarbayev Intellectual School of Chemistry and Biology in Almaty.

UNIT 1.
STUDENT POPULATION


BOYS

1.1. NETWORK AND STUDENT POPULATION

NIS reflects its student population in various documents as specified in a special internal documentation management instruction, the Instruction on NIS School and Preschool Student Population Accounting, approved by the NIS Management Board decision dated 11 August 2017 (minutes #40).

At the end of 2017, there were 20 Intellectual Schools with 14,837 students attending nationwide (*see Appendix*).

2,394 students were living in NIS boarding facilities.

Information on the socioeconomic status of student population (*data correct as of 1 September 2017***):**

- **1,982** (13.2%) students are from multiple-child or needy families;
- **2,364** (16.3%) students are from single-parent families;
- **404** (1.5%) students have elderly parents;
- **293** (1.1%) students have one or more handicapped parents;
- There are **42** (0.3%) disabled students;
- **35** (0.2%) children live with guardians;
- One student comes from an orphanage;
- **2,961** (19.7%) students are children from rural areas and small towns.

There are 1123 students at the International School Astana, and 2040 students at the National Physics and Mathematics School (including 1160 students in the Astana branch).

1.2. STUDENT SELECTION PROCESS

The NIS student selection is governed by several regulatory acts, approved by the Government of Kazakhstan, NIS Board of Trustees, or NIS Management Board (see the appendix).

A total of **17,805 candidates** took part in the student selection process during the reporting period. **2,051 students of them were admitted to NIS** (11.5%).

Results of the candidates based on the student selection test for entering NIS Grade 7 in 2017-2018 academic year

Supported by the strategic partners Cito and CTY, NIS developed and successfully implemented a unique student selection system to enter the 7th grades of NIS.

The system is designed to identify capacity in mastering mathematics and natural sciences, which means selected students are able to:

- effectively master the content of NIS-Programme;
- develop universal skills and be successful from selection to graduation;
- solve problems in many areas of academic education and subject areas.

The selection process in 2017 was characterised by the following features:

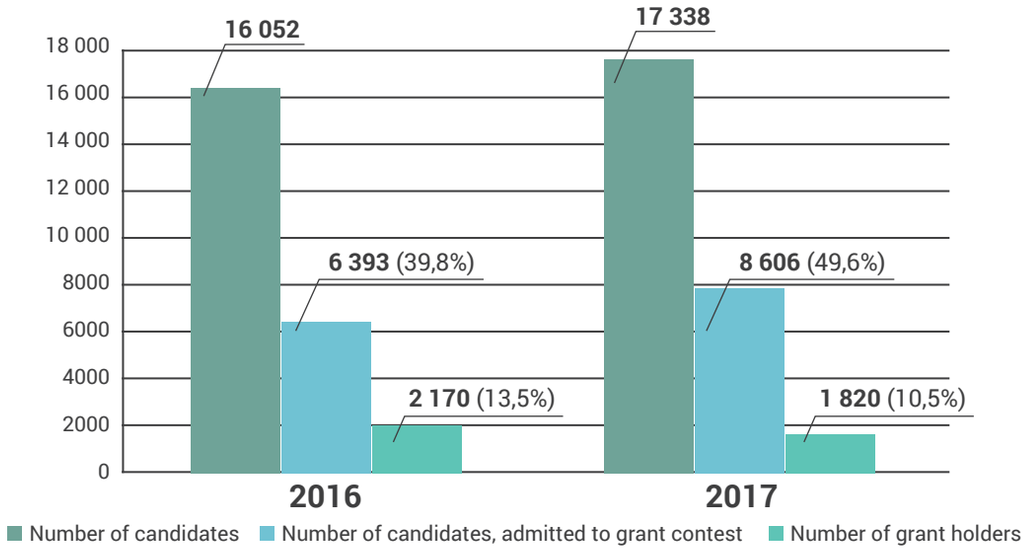
- Video-instructions were used for the first time to help candidates in taking Ability test of student selection test;
- Online broadcast accompanying the selection test process was piloted, the link to reach online broadcast was available for stakeholders;
- Statistical analysis of boys and girls' selection test results has been undertaken and has confirmed the absence of gender bias in test items.

In March 2017, **17,338** grade 6 students from comprehensive schools had taken part in the selection test carried out jointly with Cito and CTY to enter NIS Grade 7. **1,820**[1] **candidates** out of them were awarded a grant "Orken" of the First President of Kazakhstan Leader of the Nation (hereafter 'the grant') by the decision of the Republican Committee dated 12th of June 2017.

The share of candidates among the total number of Grade 6 students in the country is 6.3%. The cities with the highest proportion of Grade 6 candidates were Astana (14.8%), Atyrau (11.9%) and Almaty (11.1%), while those with the lowest proportion were from Taldykorgan (2.4%), Ust-Kamenogorsk (3.4%), Semey (3.7%) and Kokshetau (3.7%).

[1] *Out of total enrolled candidates, 1,948 students including the reserve list were awarded grants.*

Diagram. Data of 2016-2017 selection tests



Comparative analysis of 2016 and 2017 data shows a positive dynamic in the share of candidates which reached the threshold scores and were admitted to the grant contest.

In 2017, there were 9.5 applicants per place. Whereas the number of applicants to study in Kazakh classes is 2 times higher than in Russian (12.6 and 5.5 per place respectively).

***For reference**: over the past seven years, the number of applicants per place has increased more than fivefold (from 1.8 to 9.5).*

Table. The number of candidates to enter NIS Grade 7

Year	Number of candidates	Applicants per place
2016	16 052	7,3
2017	17 338	9,5

In certain regions – e.g. in Atyrau, Taraz, Kyzylorda, Almaty and Shymkent - there can be as many as 13 to 15 applicants per place.

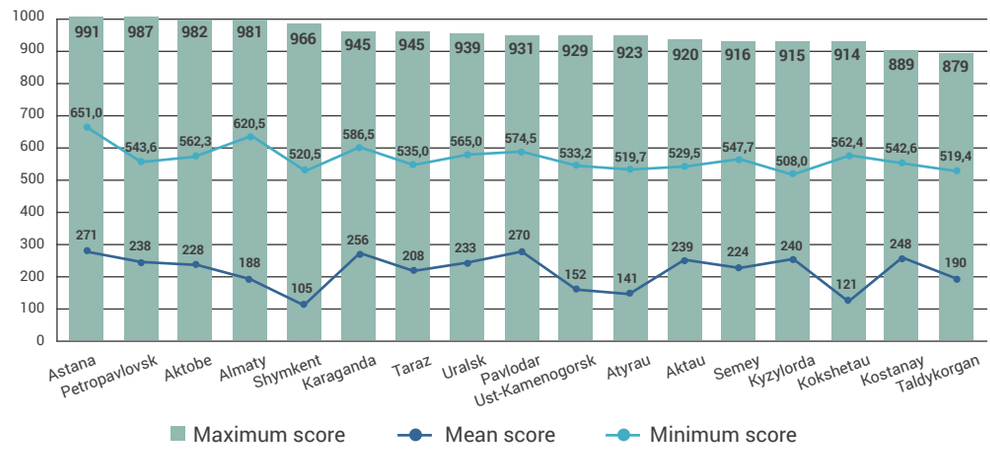
Subject test results of candidates

The average subject score in 2017 amounted to 560.5 (56.05% of the maximum score). The average score has increased by 17.5 (543 to 560.5) as compared to 2016. From the mean score perspective, the regions of Kazakhstan can be divided into 3 groups (from the highest to the lowest): group 1, comprising Astana, Almaty, Karaganda, Pavlodar, Uralsk and Kokshetau; group 2, comprising Aktobe, Semey, Petropavlovsk, Kostanay, Taraz, Ust-Kamenogorsk; and, group 3, comprising Aktau, Shymkent, Atyrau, Taldykorgan, Kyzylorda. The highest mean score of 651 was detected in Astana and the lowest 508 in Kyzylorda. The difference between the highest and lowest mean scores is substantial and composes 143 (in 2016 the difference was 154.6).

The maximum scores by test sections:

- Mathematics (400) was achieved by 129 candidates from across all the test centers except for NIS Almaty PhM and Atyrau;
- Kazakh language (L1) (200) was achieved by 317 candidates from across all test centers except for NIS Petropavlovsk;

Diagram. Subject test results by regions



- Kazakh language (L2) (200) was not achieved by any of the candidates;
- Russian language (L1) (200) was achieved by 10 candidates from NIS Astana, Almaty, Aktau, Kokshetau, Petropavlovsk;
- Russian language (L2) (200) was achieved by 246 candidates from across all the test centers;
- English language (200) was achieved by 259 candidates from across all the test centers.

It should be noted that no candidate achieved the maximum possible score in Kazakh language (L2).

In the case of Mathematics, candidates had most difficulty with the geometric meaning of modulus, percent-based text problems, proportional division and linear equations.

In the case of Kazakh, Russian and English languages, candidates had most difficulty defining the main idea and structure of a text and synonymous words and drawing conclusions by breaking down textual information.

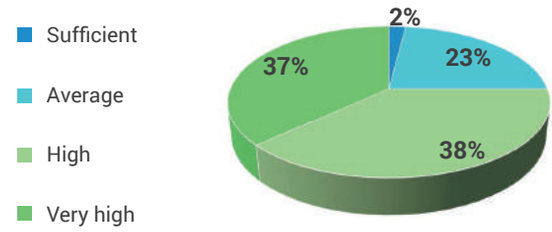
Ability test results of candidates

In 2017, the candidates' mean score by Ability test amounted to 59.4 (45.6% of the maximum score). The mean score has grown by 2.4 since 2016 (57 to 59.4). The highest mean score by Ability test was detected in Astana (71.2) and Almaty (66.2); while the lowest scores were detected in Kyzylorda (51.5) and Taldykorgan (52.2).

The highest scores by:

- Quantitative Reasoning (60 out of 60) was achieved by 1 candidate at NIS Petropavlovsk (*the first episode in the history of student selection process*);
- Spatial Reasoning (74 out of 74) was achieved by 1 candidate at NIS Almaty ChB.

Diagram. Grant holders distribution by ability levels

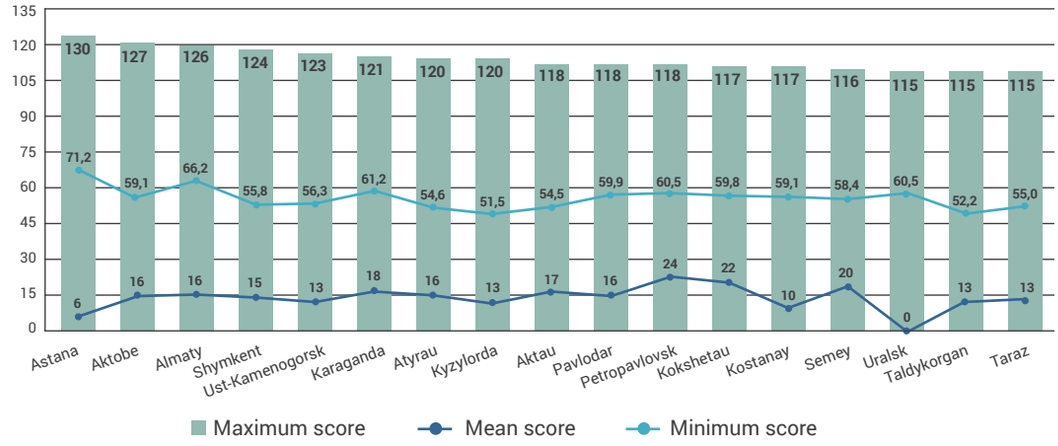


Based on the Ability test results, the grant holders were differentiated according to their ability level:

- *very high*: students' abilities are comparable to the abilities of 1% of the best Grade 9 students of comprehensive schools;
- *high*: students' abilities are comparable to the abilities of 25% of the best Grade 9 students of comprehensive schools;
- *average*: students' abilities are comparable to the abilities of Grade 9 students not included in a group of 25% of the best students from comprehensive schools;
- *sufficient*: students' abilities are comparable to the average level of abilities, but they have weaker spatial thinking skills.

The distribution by ability levels shows that 75% of students have very high or high potential in mathematics and natural sciences, which will enable them to successfully master NIS Programme. 23% of the average ability level students and 2% of sufficient level ones are capable to succeed at school as long as the learning process is organised properly. This information makes it possible for the schools to take a differentiated approach to the organisation of learning and ensure an individual development trajectory for every student.

Diagram. Ability test results by regions



Trial testing results

2017 saw the introduction of computer-based trial testing by subjects: Mathematics, Kazakh, Russian and English. This was done in order to provide comprehensive schools students with an opportunity to prepare themselves to enter NIS Grade 7 and familiarise with the format and conditions of the selection process.

Table. Mean scores by Subject test by trial testing

Mean scores of candidates			
which took part at the selection test	which did not take part in trial testing	which took part in trial testing only once	which took part in trial testing several times
560,5	**532,6** [-27,9 points]	**605,9** [+45,4 points]	**658,7** [+98,2 points]

The trial testing has a positive impact on student selection test results (the more often one takes the trial testing, the higher one's selection test score is). The trial testing helps NIS guarantee equal rights in selection process and make the selection process more open and transparent.

In 2017, the following activities were conducted:

- renewal of assessment tools for additional selection process to enter NIS Grades 1-6, 7, 10-11;
- the preparation of examination materials for:
  - the selection process for NIS Grade 1 in Kokshetau and Taldykorgan and Grade 7 in 20 NIS schools;
  - additional selection process for NIS Grades 1-2, 4-6, 8-9, 11 in NIS Astana, Aktau, Aktobe, Atyrau, Kokshetau, Kostanai, Semey, Taldykorgan, Taraz, Kyzylorda, and Shymkent PhM.

In order to maintain the efficiency of selection process under the curriculum reforms initiative, NIS intends to optimise the selection test format, update the Item Bank and automate selection procedures to suit the ever-growing candidate population.

1.3. VIRTUAL AND VACATION SCHOOL

The Virtual and Vacation Schools operate as authorised under the NIS Virtual and Vacation School Operation Instruction *(see the appendix).*

In 2017, NIS continued its Virtual School and Vacation School projects.

As for the Virtual School, Grade 5 registration was held in March 2017, and Grade 6 registration in September 2017. **A total of 4 961 students** took part in the Virtual School.

Students who are successful in the Virtual School programme were invited to their local NIS school for a full time Vacation School programme focusing on Mathematics, Kazakh, Russian, and English.

Thus, 78.4% Grade 5 Virtual School, 84.4% Grade 6 Virtual School participants were invited to attend the Vacation School.

2 040 Grade 5 students and **1 516 Grade 6 students** from comprehensive schools took part in the Vacation School.

As a result of this:

- 16.4% (501) Virtual School participants enrolled at NIS;
- 17% (388) Vacation School participants enrolled at NIS.

NIS is going to continue the Virtual and Vacation School projects, in order to aid children from comprehensive schools preparing for the NIS selection.

UNIT 2. PEDAGOGICAL STAFF

2879 teachers are employed at Nazarbayev Intellectual Schools, among them **2684 Kazakhstani teachers** and **195 international teachers.**

2.1. TEACHER SELECTION PROCESS

Pedagogical staff selection process is organized in accordance with the Rules for selection of pedagogical staff and people equated to them at Nazarbayev Intellectual Schools AEO, approved by the decision of the Management Board dated 29 August 2013 (Board minutes No. 48).

Pedagogical staff selection process was organized in all regions of the country in order to fulfill the existing vacancies at schools. **3673 candidates** participated in the selection, out of which:

- **337** people were recommended for employment at Nazarbayev Intellectual Schools;
- **417 pedagogical staff members** included in the reserve list.

For the first time, Nazarbayev Intellectual Schools recruited its **27** graduates who studied at Nazarbayev University and other leading universities of the country. All specialists speak three languages, possess advanced academic knowledge and competence.

In order to reinforce the trilingual learning environment and build up national teacher capacity in English language teaching, Nazarbayev Intellectual Schools invite international teachers.

The international teacher selection is carried out in accordance with **'The Regulations on International Teacher Recruitment at Nazarbayev Intellectual Schools' (Board decision dated 13 July 2012,** minutes #29)**.**

Nazarbayev Intellectual Schools are still in the process of recruiting international teachers in cooperation with strategic partners such as Teach Away Inc. (Canada), Teach anywhere – Ranstad Education Ltd. (United Kingdom), Search Associates (United Kingdom) and Teacher International Consultancy Ltd. (United Kingdom).

NIS school profile was made available on the official websites of international universities. Job advertisements were posted on teaching networking sites and published in international print publications. Attraction of international candidates is additionally organized on Linkedin.

NIS uses a webpage *(http://careers.nis.edu.kz)* on its official website as an additional resource to recruit international candidates, so that potential employees can directly submit an application. Over the year, twenty candidates applied via this page.

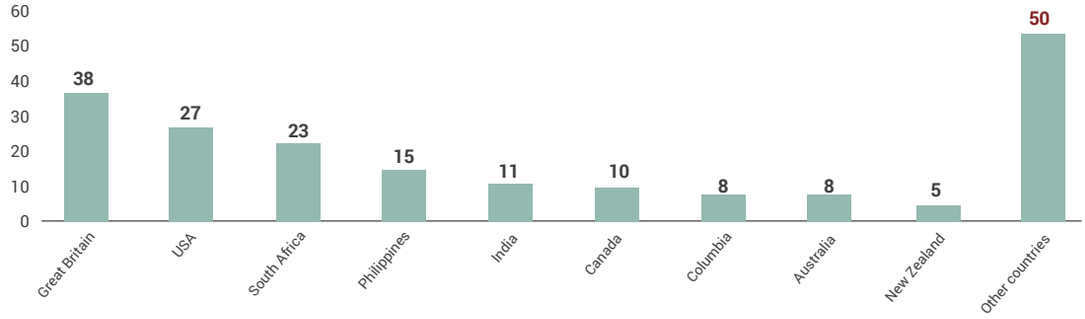
More than **700 applications** from international teachers were considered during the reporting period. **205 interviews** were held, **more than 100 candidate profiles** were reviewed, and **78 employees** were invited to work at NIS schools. Employment relationships were prolonged with **117 teachers**.

The main international teacher selection criteria are qualification level and experience. NIS checks the candidate's personal papers, including cover letters from previous employers, qualifications, police clearance and medical examination.

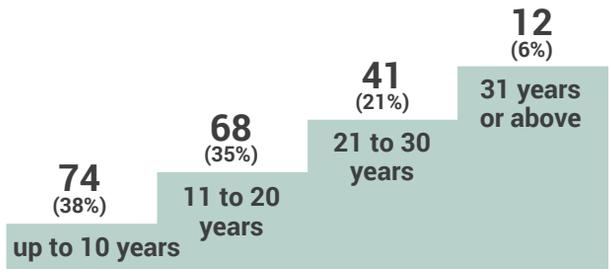
Compared to the previous year, the number of international teachers who have worked at NIS for four and more years has increased by 9.5%:

The international teacher team comprises 4 PhD degree holders, 113 teachers with postgraduate degree, and 53 holders of international certificates (IBDP, TESOL, ESL, TEFL; IELTS, CELTA, DELTA examiners).

Diagram. International teacher distribution by country



Teaching experience of the international teachers working at NIS:



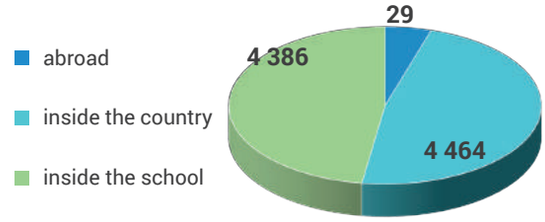
International teachers teach subjects of the scientific cycle in high school, prepare for international examinations, participate in the professional development of Kazakhstani colleagues, etc.

2.2. PROFESSIONAL DEVELOPMENT SYSTEM

Professional development system for the pedagogical staff undergoes consistent development in the framework of different training programmes. It is intended to develop competence, find efficient solutions for professional tasks in the learning process and is regulated by 'The Regulations on professional development', approved by the NIS Management Board decision dated 29 August 2014, minutes #40).

In total, within the reporting period, **8879 people** participated in training courses **within the schools, in the country and abroad.**

Diagram. The number of teachers who underwent professional development courses



WITHIN THE SCHOOLS

4464 people were trained in four modules **within the schools**:

- Pedagogical knowledge – 1 967 people;
- The Kazakh Language – 627 people;
- The English Language – 1 473 people;
- Information and Communication Technologies – 397 people.

THROUGHOUT THE COUNTRY

4386 people participated in **54** different training courses in five separate strands **throughout the country**.

Strand 1.

Developing academic knowledge, improving teaching practice, enhancing pedagogical excellence

These courses were focused on developing all necessary skills and proficiencies to ensure successful learning such as critical thinking, communication and teamwork skills, creative approach, and behaviour in the digital environment.

№	Programme/course title	Number
	Within the country	
1	Professional development course on academic writing, *Häme University of Applied Sciences (Finland)*	19
2	Basics of the theory of inventive problem solving pedagogy, *TRIZ-profi (Russia)*	20
3	Professional development course in Chemistry, Physics, Biology, Computer Science, *Nazarbayev University (Kazakhstan)*	133
4	Involving students in the inquiry-based learning of Science through data registration, *PASCO (USA)*	40
5	Economics for Diploma Programme, category 2, *International Baccalaureate Organisation (IBO)*	2
6	Social and cultural anthropology, category 2, *International Baccalaureate Organisation (IBO)*	1
7	History SL, category 1, *International Baccalaureate Organisation (IBO)*	1
8	Design: Implementing the MYP curriculum, category 1, *International Baccalaureate Organisation (IBO)*	1
9	Design: Delivering the MYP curriculum, category 2, *International Baccalaureate Organisation (IBO)*	2
10	Chemistry for Diploma programme, category 2, *International Baccalaureate Organisation (IBO)*	2
11	Theory of knowledge, category 2, *International Baccalaureate Organisation (IBO)*	5
12	Approaches to teaching and learning in the DP, category 3, *International Baccalaureate Organisation (IBO)*	5
13	The role of the supervisor in extended essays, category 3, *International Baccalaureate Organisation (IBO)*	25

14	Concept-based learning, *Erimus Education Malcolm Nicolson (Great Britain)*	39
15	Ethics and Educational Research, *Marit Hoveid, Norwegian University of Science and Technology, Norway*	13
16	Writing academic articles, *Philip Montgomery, Nazarbayev University Professor, Kazakhstan*	19
17	The Economic Impact of Digital Technologies, *Academy of Innovative Intelligent Technologies LLP, Kazakhstan*	18
18	CLIL Assessment, *Peeter Mehisto, United Kingdom*	15
19	Elementary military training, *Educational and Tutoring Centre 'Grand Radian' LLP, Kazakhstan*	2
20	TALIS Professional development course, *(Kazakhstan)*	20
Total		**382**

Strand 2. **Developing teachers' linguistic competence**
Language learning is provided on a regular basis

№	Programme/course title	Number
	Within the country	
1	Online General English Course, *British Study Centres (United Kingdom)*	100
2	Language A: Language and literature, category 2, *International Baccalaureate Organisation (IBO)*	4
3	Language A: Literature (Cat.2), SL category 2, *International Baccalaureate Organisation (IBO)*	3
Total		**107**

Developing teachers' linguistic competence entails developing their knowledge of Kazakh and English to a professional level.

№	Programme/course title	Number
	Within the country	
1	KazTest Course, *National Testing Centre (Kazakhstan)*	1814
2	APTIS Course, *British Council (Kazakhstan)*	921
Total		**2735**

Strand 3. **Developing communication, life and meta-subject skills.**

Professional development courses were held to develop teachers' competence and to help them deal with stress, manage time, process and systematize text and numerical information, and justify their opinions in a well-argued manner and so on.

№	Programme/course title	Number
	Within the country	
1	Stressless school: integrative kinesiology in the educational practice. *Smirnova S.S.(Russia)*	48
2	Professional development course 'Stressless school: integrative kinesiology in the educational practice' (supervision) *Smirnova S.S. (Russia)*	48
3	Time management.*Centre of Excellence (Kazakhstan)*	20
4	School mediation: conflict resolution and crisis management among students. *Crisis Management Institute (Kazakhstan)*	75
5	Childhood and Adolescent Coaching. *Instituto de Coaching Infantil y de Adolescentes (ICIA) (Russia)*	22
6	The Keys to Well-being in Students *Gordon Neufeld (Canada)*	80
7	Solving daily life problems *TRIZ-PROFI (Russia)*	15
8	Modernization of social consciousness — new perspectives on NIS students' development *(Kazakhstan)*	20
9	Training course (workshop) for school press secretaries 'Creating a successful press service in the NIS schools'*(Kazakhstan)*	16
Total		**344**

Strand 4. Developing and monitoring ICT competence, using new technologies and learning tools in the educational process

Teachers' information communication technology competences were further developed in robotics and programming.

№	Programme/course title	Number
	Within the country	
1	Professional development course in Olympiad-level Robotics *Educational Resource Centre (Kazakhstan)*	23
2	Java SE7 Fundamentals (Basic) *'High Tech for Human' Kazakh Science Education Centre (Kazakhstan)*	4
3	Computer Science for Diploma Programme, category 2, *International Baccalaureate Organisation (IBO)*	1
4	Evaluating NIS pedadogical staff and eligible staff memebers during the attestation *Centre of Pedagogical Measurements (Kazakhstan)*	60
5	OneNote and Sway: Get started with OneNote; STEM and Minecraft: Problem-based learning; Skype in the classroom: introducing and using Skype in the classroom, *Microsoft Kazakhstan*	105
Total		**193**

Strand 5. Professional development of NIS employees

All categories of NIS staff are provided with professional development.

To efficiently organize the NIS medical service and to improve the quality of primary medical-preventive activities intended to protect and promote students' health, professional development courses were held for the NIS medical personnel.

№	Programme/course title	Number
	Within the country	
1	Current issues in paediatrics *University Medical Centre Corporate Fund*	6
2	General nursing technologies *University Medical Centre Corporate Fund*	11
3	Basic principles of healthy eating (for medical staff) *University Medical Centre Corporate Fund*	4
4	Prevention of children's dental diseases *University Medical Centre Corporate Fund*	3
5	Clinical aspects of treatment and prevention in paediatric dentistry *University Medical Centre Corporate Fund*	1
6	Modern methods and techniques of asepsis, antiseptics and disinfectants at dentist appointment. Work site preparation. *University Medical Centre Corporate Fund*	3
Total		**28**

Due to changes in labour legislation, training courses were held for lawyers and personnel inspectors. According to the legislation requirements, these courses are conducted annually for premises licensing specialists.

№	Programme/course title	Number
	Within the country	
1	Distribution, storage and use of drugs, psychoactive drugs and precursors *'Spetspromobrazovanie' LLP (Kazakhstan)*	433
2	The peculiarities of labour relations and HR record management in the RK *Educational and Tutoring Centre 'Grand Radian' (Kazakhstan)*	19
3	Labour law of the Republic of Kazakhstan in favour of the employer *ADK Project LLP (Kazakhstan)*	15
4	Professional development course on pricing practice in market relations *(Kazakhstan)*	4
Total		**471**

To support the learning process NIS pays considerable attention to the development of the library system and management of the NIS boarding facilities.

№	Programme/course title	Number
	Within the country	
1	Training course for librarians 'A practical guide to improving reading literacy — fundamental for students' intellectual and creative development' *Bora Chong* (*South Korea*)	27
2	Training course for librarians 'Creating a Culture of Literacy: promotion of reading and spatial skills development in STEM schools', *Linda Swarlis (USA)*	36
3	Training course for dormitory supervisors 'Improving the dormitories: experience and development trends', *NIS (Kazakhstan)*	18
Total		**81**

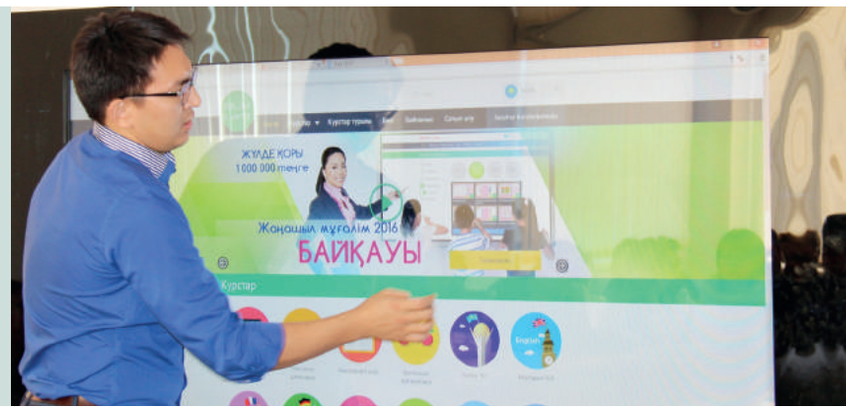
PROFESSIONAL DEVELOPMENT COURSES WITH THE PARTICIPATION OF CAIE

20 computer science experts, including developers, development editors, and proofreaders, participated in a **training course for the examination developers**. The participants were able to acquire practical knowledge in developing examination papers for component two of the Grade 10 Computer Science examination.

Two training courses were held for **45** people within the country with the participation of CAIE consultants.

25 CEP employees participated in **a training course on the development of research skills**. By the end of the course, participants acquired research and analytical skills, learnt to select research topics and to generate hypotheses, to choose tools for research and data interpretation, expanding the range of their research.

A total of 1113 NIS teachers underwent training at the Centre of Excellence



500 NIS teaching staff members undertook training on the educational (level) programmes.	**'Effective teaching and learning' - 283 participants**	**'Teacher leadership in school' - 165 participants**	**'Teacher leadership in pedagogical society' - 52 participants.**

Besides, Center of Excellence developed a programme on emotional intelligence and organized a webinar training for **593 NIS teachers.**

Moreover, the Center of Excellence developed an educational programme on time management, and twenty NIS vice-principals participated in the training.

Methodological support for NIS Teachers

COE trainers provided consultation and methodological support for NIS teachers according to the following scheme:

Once a week	• **Online teacher consultation on teaching methodology.**
Once a month	• Providing methodological support to mentors on working with target groups; • Mentoring creative laboratory heads (online or face-to-face); • Posting materials on the 'Learn and Share' webpage • Observing lessons of subject teachers for further methodological support.
Once a term	• Holding workshops by experts and researchers for level programme trainees; • Holding ongoing workshops as required for school teachers; • Mentoring NIS principals with school visits.
Once every six months	• Analysing teachers' difficulties (at the beginning and end of the academic year).

COE engaged in **2052 teacher support activities** for NIS teaching staff over the last year.

OVERSEAS PROFESSIONAL DEVELOPMENT

Ten professional development courses were held abroad (**29 people)**.

Table. Overseas professional development courses and the number of participants

№	Programme/course title	Number
1	CELTA Professional Development Course, *Docetis International Ltd (UK)*	7
2	DELTA Professional Development Course, *Docetis International Ltd (UK)*	3
3	Extending libraries, providing media learning and research at school, *FIF Technologies LLP (Singapore)*	11
4	Biology for Diploma Programme, Category 2, *IBO, Dubai (UAE)*	2
5	Approaches to teaching and learning in the DP, *IBO, Coventry (United Kingdom)*	1
6	Language A: Language and Literature for Diploma Programme, category 2, *IBO, Coventry (United Kingdom)*	1
7	Heads of school/IB coordinators: Implementing the MYP curriculum, *IBO, Riga (Latvia)*	1
8	Mathematics HL, for Diploma Programme, category 2, *IBO, Warsaw (Poland)*	1
9	Mathematics SL, for Diploma Programme, category 2, *IBO Warsaw (Poland)*	1
10	Heads of school/IB coordinators: Implementing the MYP curriculum, *IBO, Berlin (Germany)*	1
Total		**29**

Targeted professional development

In order to develop a candidate pool and implement the international specialist substitution policy, every year NIS teaching staff take training courses in the leading educational institutions of the country and abroad. In 2017, the number of teachers trained amounted to 96.

Table. Teachers who took postgraduate studies at Nazarbayev University and internship training under the programmes of Bolashak and NIS Teacher Internship.

№	Educational programme	Number of graduates	Dates of attendance
1.	Masters degree, Nazarbayev University	37	2017-2019
2.	Internship at the Bolashak Programme	3	2016-2017
3	Internship of NIS teaching staff in the United Kingdom	56	2017

Master's degree, Nazarbayev University

Nazarbayev University courses provide an opportunity for teachers to develop professionally and gain Doctors, Master's degree on and off their job.

81 NU graduates are employed at Nazarbayev Intellectual Schools: 1 PhD, 65 graduates with Master's degree, 15 – with Bachelor's degrees.

Furthermore, in 2017, **37 people** enrolled in Master's degree programmes at Nazarbayev University.

Bolashak Programme internships

At present, **102 Bolashak graduates** are employed at NIS: 47 graduates of the internship programme (including three with the University of Cambridge in 2017); 51 graduates of postgraduate studies and 4 graduates of undergraduate programmes.

Teaching team internship in the United Kingdom

Thirty-two teaching staff participated in internships via the **'CLIL in UK secondary schools[2]'** programme to learn the principles and practice of content and language integrated learning. **After the internship, teachers developed a handbook,** *A Collection of CLIL Activities for Chemistry, Biology, Physics and Computer Science*, for the use of Grade 11 NIS students during extracurricular activities.

In 2017, NIS continued its **partnership with University of Cambridge Faculty of Education** and **22 subject teachers** from NIS Aktau, NIS Almaty, NIS Atyrau, NIS Kostanay, NIS Kyzylorda, NIS Petropavlovsk and NIS Taraz participated in the internship programme there.

Teachers worked collaboratively on STEAM (Science, Technology, Engineering, Arts and Math) subjects and a research project in this area. Internship studies helped teachers gain experience from native speakers in teaching their own subjects and improve their research potential.

Certified trainers

As a result of professional development, a cluster of certified trainers has been developed. It is one of the basic internal resources, which develops the potential of NIS teachers giving support to their colleagues through training and mentoring.

A cluster of certified trainers includes **562 trainers**, including **112 team members,** who underwent training programs in 2017.

[2] *Content and language integrated learning is an approach for learning through a content and language integration based on secondary school of the British Education system*

Table. Cluster of certified trainers

№	Programme/course title	Total	incl. 2017
1	Trainers in the 'Development of Gifted Children' programme, *Johns Hopkins University*	47	
2	Experts evaluated under the 'Development of Gifted Children' programme *Centre of Pedagogical Measurements, NIS*	9	
3	COE Level programme trainers *NIS Centre of Excellence*	52	
4	CE Level programme evaluating experts *Centre of Pedagogical Measurements, NIS*	14	
5	Basic Robotics trainers *Nazarbayev University*	4	
6	Critical thinking trainers, CICTT *Cambridge International Certificate for Teachers and Trainers*	25	
7	Teaching Knowledge Test trainers, *TKT*	7	
8	Distributed leadership trainers, *University of Pennsylvania*	2	
9	Examination development trainers, *Centre of Pedagogical Measurements Cito*	84	
10	PISA trainers, *Pearson*	23	
11	Microsoft trainers, *Microsoft*	11	
12	Language competence (4 skills) trainers, *NIS Centre of Excellence*	14	
13	Robotics trainers, *NIS Centre of Excellence*	59	
14	Robotics trainers, *University of Malaya, Malaysia*	12	
15	CELTA holders, *Cambridge Assessment English*	26	7
16	DELTA holders, *Cambridge Assessment English*	6	3
17	CLIL trainers, *Docetis International*	54	32
18	Professional development trainers for educators within updated secondary education of Kazakhstan, *NIS Centre of Excellence*	39	5
19	International Baccalaureate trainers, *International Baccalaureate Organisation (IBO)*	16	8
20	CELTYL holders	1	
21	Trainers developing teachers' professional development, *Centre of Pedagogical Measurements, NIS*	57	57
	Total number of trainers:	**562**	**112**

Thus, a pedagogical community adhering to the principles of lifelong learning, cooperation, research and the professional dialogue has been established.

2.3. TEACHER EVALUATION

In the period November 2016 to June 2017, NIS conducted appraisal for pedagogical staff of NIS schools and International School of Astana. The appraisal was conducted in accordance with 'The Regulations on appraisal of pedagogical staff and people equated to them', approved by the NIS Management Board meeting dated 14.07.2016 (minutes #33) and NIS Management Board Chair order #548/OD dated 11.11.2016.

A renewed model of pedagogical staff appraisal policy is implemented in 2017, which consists of three stages:

- school assessment;
- independent assessment;
- decision-making stage.

The primary focus of the new model is on **teachers' classroom practices**. That's why ***school assessment*** is a long stage lasting from September to April. At this stage, every teacher defines the aim of professional development as consistent with his or her teaching level for the entire academic year. During this stage, the school administration and teacher support units observe lessons and teaching practice on a regular basis.

At the stage of independent assessment, teachers reflect on the lesson and write a report and CPM experts evaluate it. Following the results of every stage, the school attestation committee makes recommendations.

At the final stage, teachers represent their professional results for the appraisal period. During their presentation, the committee evaluates their

self-reflection and predicted professional changes based on the conclusions drawn from the analysis and evaluation of teaching, learning and sharing experience.

In 2016-2017, the following number of people took part in the appraisal process:

724 teachers being appraised according to six levels of pedagogical excellence;

165 teachers and eligible staff members being appraised according to two levels.

Out of 724 candidates for appraisal, the following results were recorded:

626 people (86.5%) were successful attested to the applied level of excellence: teacher - 112; teacher-moderator - 462; teacher-expert - 52.

82 people (11.3%) were unsuccessful: teacher - 1; teacher-moderator - 58; teacher-expert - 18; teacher-researcher - 5.

2 people (0.3%) recommended for reappraisal;

1 person (0.1%) had their level of pedagogical excellence downgraded;

4 people (0.6%) had their attestation date rescheduled for various reasons; and,

9 people (1.2%) were dismissed from early attestation (due to plagiarism in the reflective reports).

Out of 165 teachers appraised according to the two levels of pedagogical excellence system:

142 people (86.1%) were successful attested to the applied level of excellence including 53 to a basic level, and 89 to the first level.

17 people (10.3%) do not correspond to the specified level of pedagogical excellence including: three to basic level, and 14 people to the first level.

1 person (0.6%) recommended for reappraisal;

5 people (3%) had their attestation date rescheduled for various reasons.

The number of people who plagiarized their reflective reports during the attestation significantly decreased from 7% in 2016 to 1.2% in 2017.

In conclusion therefore, following the latest round of attestation, the number of NIS teachers of different levels of pedagogical excellence was as follows: teacher-researchers – 6, teacher-experts – 243, teacher-moderators – 892, teacher - 1342; and, teacher-interns - 522.

As compared to the previous reporting period, **the number of teacher-experts increased by 52, and teacher-moderators by 430**, while the number of teachers and teacher-interns decreased by 256 people.

Remuneration

Article 1.5 of the NIS 2020 Strategy (approved by the Supreme Board of Trustees on 18.04.2013) lists the NIS operational principles, one of them being innovativeness – the use of cutting-edge methodology and technology and up-to-date knowledge and information.

With the 'OECD Review of School Resources: Kazakhstan 2015' report recommending transitioning from the current teacher remuneration system (the so-called 'stavka' system, when teachers are only paid for the academic hours taught) to a salary-based one, the NIS Board of Trustees has approved the introduction of a salary-based teacher remuneration system (minutes #6 dated 9 December 2017). The new system is scheduled to become effective as of 1 January 2018.

Based on the actual workload, the new remuneration system has many a strength:

- higher teaching quality, by virtue of having less overworking teachers;
- stable teacher income, with the teachers paid not only for the academic hours taught but also the lesson preparation, planning, assessment, student achievement analysis, professional development, extra-curricular activities, experience dissemination, etc.
- better job climate, a result of the even teacher workload distribution.

2.4. QUALITATIVE COMPOSITION OF PEDAGOGICAL STAFF

Annually, the share of teachers with the higher academic degrees is increasing. As compared with the previous reporting period, the number of Candidates of Sciences increased by three; the number of PhDs by two; and, and the number of teachers with Master's degree by 71.

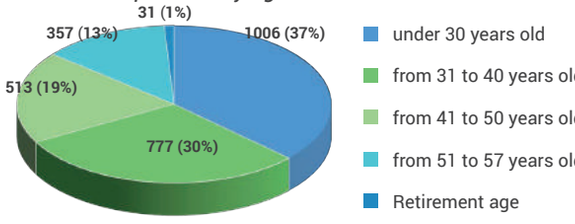
Table. Highest academic degree of NIS teaching staff in 2016-2017

Academic degree	2016	2017
Doctorate	2	4
Candidate of Sciences	19	22
Masters	648	719
Total	669	745

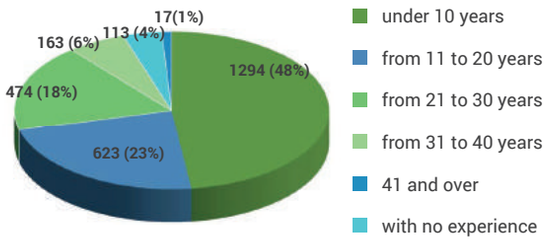
Age and work experience

The age composition experience level of teachers remained roughly the same as in the previous year:

Teacher composition by age



Teacher composition by work experience



In terms of gender, in NIS teachers **731** (27%) are men and **1953** (73%) are women.

2.5. TEACHER ACHIEVEMENTS

Due to high level of expertise NIS teachers participate in national and international contests and conferences. NIS teachers achieved good results by the end of 2017. .

Two NIS teachers became the winners of 'Teacher of the Year - 2017' competition.

Bekzhan Kopbossynov,
a Kazakh Language and Literature teacher at Nazarbayev Intellectual School of Physics and Mathematics in Shymkent

Bekzhan's lessons are characteristic of the creative approach and global mindset. He was awarded NIS Teacher of the Year 2013, and was winner of an International Poetry Festival held in Kars, Turkey.

One of Bekzhan's most interesting projects is Alippe: aripter alemi ('The alphabet: a world of letters'), poems, songs, and fairy tales dedicated to each letter of the alphabet.

Nurym Nurgaliyev,
a Biology teacher at Nazarbayev Intellectual School of Chemistry and Biology in Almaty

Winner of the 'Teacher of the Year', Grand Prix, Uralsk.

Author of four electronic Biology textbooks, certified Microsoft teacher, Action Research coordinator. Author of the programme 'Hip Hop Pedagogy'.

29 NIS team members received the following awards:

Altynsarin Medal –
6 people;

Honoured Education Specialist Medal –
2 people;

A Certificate of Honour from the Ministry of Science and Education –
21 people;

Letters of Gratitude from the Ministry of Education and Science were given to
50 people on Teacher's Day.

INTEGRATION INTO INTERNATIONAL EDUCATION

One of the results of teachers' research activities is their participation in national and international conferences.

Creative labs by six teacher-researchers were presented at the NIS Teacher August Conference, entitled 'Teaching and Learning Results and Perspectives in Nazarbayev Intellectual Schools: New Demands, New Opportunities', allowing them to share their innovative practice with others.

History teacher, **S.R. Akhmetova** from NIS Astana introduced teaching practice on the development of students' research skills in humanities subjects.

Mathematics teacher, **G.K. Apeyeva** from NIS Astana PhM shared her experience of effective planning using approaches and tools such as differentiated and individualized learning.

Physics teacher, **S.N. Asylbekova** from NIS Astana PhM introduced learning styles and teaching strategies, which can help students achieve high performance, based on her own practice.

Mathematics teacher, **G.D. Zhampeisova** from NIS Astana summarized her experience in lesson planning based on students' individual requirements.

Mathematics teacher, **S.S. Polyanskih** from NIS Taldykorgan introduced the principles of preparing Olympic reserve trainers and adapted programme 'Development of Gifted Children' for Matematics subjects.

Biology teacher, **G.A. Imashpayeva** from NIS Ust-Kamenogorsk shared her teaching practice on conceptual learning and particular planning.

conferences.nis.edu.kz

In August 2017, **five practitioners and two NIS employees** attended **the European Conference on Educational Research (ECER)** held in Copenhagen (Denmark). The theme of the conference was "Reforming Education and the Imperative of Constant Change: Ambivalent roles of policy and educational research".

Two thousand seven hundred representatives from 68 countries attended the conference. The aim of ECER is to create a wide international platform for discussing the role and effect of global research conducted by such international organisations as the OECD, EU, Bologna Process and so on, and developing the national economy and education of different countries.

Eight hundred and ninety five speakers among whom were our teachers gave speeches at plenary sessions, breakout sessions and poster sessions. The keynote speakers were from Harvard University, United States, University of Bath, United Kingdom; University of Aarhus, Denmark, and, Södertörn University, Sweden.

http://www.eera-ecer.de/

In November 2017, **three** NIS staff members participated in WORLDDIDAC RUSSIA. One hundred and forty six companies from 38 countries and five continents attended.

Teachers shared their experience during the business programme of the conference 'Digital education is the first step to the digital economy'.

http://www.worlddidac-russia.com

In April 2017, **three teachers** from **NIS Astana attended the XI Annual Conference of the Association of IB Schools, themed 'International Baccalaureate: The Integration of countries into education'** held in Yerevan (Armenia).

The conference aims to create a community of educational organizations and institutions to support IB schools.

Pedagogical staff members gave a speech on the following themes:

- 'Managing the introduction of basic MYP components such as Service and Action and approaches to learning with the help of academic leaders' (*A.E. Ibentayeva);*
- 'How to develop students' creative skills in Visual Art, Grades 8-9' (*O.A. Danilchuk);*
- 'Developing continuous reading skills is a foundation for successful education' (*T.Zh. Ganiyev).*

http://ibsa.studyapps.ru/Conference/ConferenceInfo/97

In October 2017, **four staff members** from NIS Astana participated in the Regional IB **Conference for African, European and Middle Eastern countries** held in the Hague (Netherlands).

The following issues were considered at the conference:

- programme standards and upper secondary school programme practices;
- structured model of a new secondary school programme and its fundamental terms;
- requirements for new subject programmes;
- innovations in subject programmes of upper secondary school (DP).

NIS participants gave a speech on the following themes:

- The role of mentoring in the leadership development' (*K.T. Akhmadiyeva, G. Bytimbayeva);*
- Compassionate systems: fundamental for international thinking and effective actions in a complex world' (*M. Altaybekova);*
- 'Great schools do differently: school differentiation for school principals' (*R. Kudaibergen).*

www.ibo.org/about-the-ib/the-ib-by-region/ib-africa-europe-middle-east/aem-regional-conference/ib-global-conference-the-hague-2017/

UNIT 3.
CONTENT OF EDUCATION

3.1. EDUCATIONAL PROGRAMMES

3.1.1. NIS PROGRAMME

Following the NIS Management Board decision dated 16 August 2017 (minutes #41), NIS Integrated Educational Programme has been rebranded as NIS Program, the NIS Educational Programme.

The new programme has been being adopted by NIS schools since 2012. The NIS Program is being taught in Grades 1-5 and 7-12 in the 2017-2018 academic year.

The evaluation of the new curriculum is being accompanied by ongoing monitoring as specified in the evaluative methodology approved by the CEP Scientific Council meeting dated 10 January 2014, minutes #1. The monitoring activities are aimed at identifying factors that support successful integration of educational programmes and issues occurring at the implementation stage.

The target audience for monitoring is the NIS administration, NIS Program coordinators, teaching support supervisors, and teachers and students of Grades 4 and 7-12. **A total of 327 lessons in Grades 4, 7-12** were visited as part of ongoing monitoring in 2017.

Annual monitoring centres on hearing the students' voice, identifying issues, and finding the best ways of addressing them.[3] Workload in the upper grades has been an issue throughout the five-year integration cycle. According to the approved methodology, fundamental changes may only be introduced after five-year evaluation period.

Therefore, a scheduled review of the upper secondary school model was carried out during the reporting year.

In 2017, the content of education was reviewed on the following strands:

- Review of subject programmes and course plans for primary school after primary approbation and integration into educational process;
- Review of subject programmes and course plans for secondary school to ensure consistency with State Compulsory Education Standards; and,
- Modelling and content review of subject programmes for upper-secondary school.

Primary school

The evaluation of all primary subject programmes and course plans for Grade 4 was carried out in 2016-2017 as scheduled. As the result of the monitoring, ten subject programmes and language immersion programme for primary school have been revised.

Wording of learning objectives and inter-subject topics in subject programmes and course plans has been changed during the review process. These changes is to establish correlation between learning objectives and renewed content of education of comprehensive schools. The scope of writing has been determined for language subjects to improve enhance education process.

The following has been changed in course plans for Grades 1-5:

1) The ideal types and forms of learning and teaching activities enhancing functional literacy building have been selected for language subjects. Resources have been revised and updated;

2) Methodological recommendations on building research skills and logical thinking through project activities have been suggested.

Secondary school

Following the recommendation of the Principals' Council (Minutes No. 2, 07.02.15), changes to the secondary school subject curricula were made in 2015 (Order No. 66-1/ОД, 07.02.15). These programmes were first developed in collaboration with Cambridge Assessment International Education (Cambridge Assessment) in 2012. To maintain consistency between the comprehensive school curriculum and NIS Grade 7 subject programmes, and to enhance cross-curricular integration additional adjustments were required.

Thus, stepwise revision and integration of secondary school subject programmes have been carried out since 2015.

	Grade			
Academic year	7	8	9	10
2015-2016				
2016-2017				
2017-2018				
2018-2019				

Grade 9 subject programmes and course plans for Mathematics, Physics, Chemistry, Biology, Geography, Computer Science, Kazakh L1, Kazakh Language and Literature L2, Kazakh Literature, History of Kazakhstan, World History, Russian L1, Russian Language and Literature L2, English language, have been revised and integrated into education process in 2017 as scheduled.

Upper Secondary School

In order to reduce that the academic load on students, and to ensure that learning be differentiated, our upper secondary school model has been revised.

The process of upper secondary school model revision was based on an 'investigative approach' and was undertaken in several stages.

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[3] Согласно исследованиям ОЭСР, крайне важно участие учащихся в формировании мира вокруг себя, возможности самостоятельно делать осознанный выбор, вместо того, чтобы позволять обстоятельствам и другим людям решать всё за них.

Stage one included analysis of current subject programs, and the development of an upper secondary school model.

Stage two included the collection of feedback from stakeholders – including students, teachers, and members of school administrations – in the educational process on the renewed model.

Stage three included an analysis of collected data and further development of upper secondary school model with the recommendations from students, teachers and NIS Principals' Council.

Feedback from NIS alumni on the benefits of the Integrated Educational Programme (IEP), and on the difficulties they were facing in higher education has also been taken into consideration.

The renewed upper secondary school model continued to be guided by the principles of specialisation and subject choice. Key changes include the following:

1. Now students can choose between two subject programmes for mathematics: one that provides seven hours per week of tuition, the other ten hours per week. The ten-hour option is intended for students who plan to choose university-level subjects that require an advanced level of mathematics. This option includes additional topics and extended units for advanced study.

2. To ensure holistic understanding of concepts in physics and chemistry, students can now choose **a third standard level subject** (Biology, Physics, Chemistry, Computer Science and Geography) in addition to two majors. The course takes **three hours a week in Grade 11 and in the first half of Grade 12.**

3. Graphic Design is a new elective standard level subject on the standard level. This course takes three hours a week in Grade 11 and in the first half of Grade 12 and introduces basic of design and engineering preparing students for engineering programmes.

4. Previously integrated learning of language and literature was available for L2 subjects only, whereas now, as part of the new model, it will also be made available at **L1** level (Kazakh/Russian).

The integration of language and literature benefits further development of reading literacy, text comprehension, analytical thinking, skill of comparison, making conclusions and critical evaluation of text of various genres. At the same time, **the number of hours in Grades 11 and 12 were reduced** for **language subjects** as the result of the integration.

5. The communicative approach to teaching English and major subjects in English in higher grades (one more subject has been added in the new model) allows students to learn the language at a sufficiently high level. The **reduced number of hours** for English Language and Global Perspectives and Project Work, providing students more time for preparation to final assessment in Grade 12.

As a result, the weekly academic load on upper secondary school students **is reduced from 82 to 75 hours** over two academic years. **Term 4 of Grade 12 is freed for preparation for external final summative assessment.**

The renewed upper secondary school model was approved by NIS management in June 22, 2017 (Minutes No. 31). In 2017-18, the renewed upper secondary school model was implemented in Grade 11.

In 2017, the following documents were revised: the upper secondary school model, 24 subject programmes, and 92 course plans. The following documents were developed: 8 subject programmes and 10 course plans.

Supporting Teachers in Implementing the NIS Program

Monitoring of the educational programme rollout has shown that new topics in the science cycle are presenting major difficulties both for learners and for teachers. The topics are standard for international 12-year educational programmes like A Levels, O Levels, and International Baccalaurate programmes.

For example, in **Mathematics:** 'Distribution of discrete random variables'; 'Solving applied problems through integration and differentiation'; and, 'Vectors in space: using vectors for making equations of lines and planes'.

In **Physics:** 'Ideal fluid, laminar and turbulent flow, the Torricelli equation'; and, 'Spectral classes of stars'. In **Chemistry:** 'Complex compounds, metal aquocomplexes'; and, 'Instrumental methods of analysis; gas-liquid chromatography, mass spectroscopy, IR spectroscopy, NMR spectroscopy'.

In **Biology:** 'Life formation stages on Earth. Differences between cladograms and phylogenetic trees'; 'Comparing myelinated and unmyelinated neurons through modelling', and, 'Using statistical methods of data processing' etc.

In order to support teachers with the new units, curriculum developers and academics from leading national universities provided active lectures and practical workshops for NIS teachers.

Teachers looked at how learning objectives might be achieved through investigate activities, such as laboratory work and field trips.

The communicative approach in language acquisition is a major issue of concern for teachers and students in the teaching of language subjects. In particular, concerns surrounded textual analysis, spelling, and punctuation literacy.

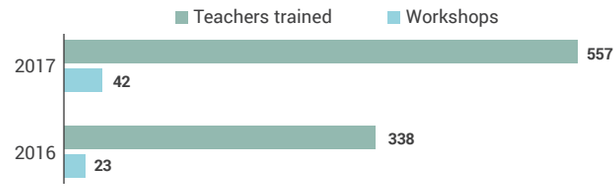
In order to address these concerns, summer classes were organised for Kazakh Language, Kazakh Language and Literature, Kazakh Literature, Russian Language, Russian Language and Literature and Russian Literature teachers:

- *lower secondary school* teachers learned about textual analysis, working with authentic material and discontinuous texts; understanding the role of context and targeting audience, application of stylistic devices; and, comparative text analysis;
- *upper secondary school* teachers learned about the features of integrated language and literature teaching; the methods of organizing research linguistic activities with texts; and, the analysis of language units in a functional aspect.

Practical approaches aimed at developing historical thinking became a priority for **the humanities group of subjects.** Concept-based approaches and methods of teaching were introduced. They contribute to deep and systematic thinking through the selection, structuring and synthesis of historical information.

Forty-two subject-based training sessions for 557 NIS teachers were delivered in 2017 on humanities subjects. Among them were the following:

- ***Twenty training sessions*** for **Grade 7-10** teachers of World History, History of Kazakhstan, Geography, Arts, Kazakh Language (L1), Kazakh Language and Literature (L2), Kazakh Literature, Russian Language (L1), Russian Language and Literature (L2), English Language, Mathematics, Biology, Physics, Chemistry, and Physical Education;
- ***One training session*** for **Grade 9** teachers of the Basics of Law;
- ***One training session*** for **Grade 11** teachers of Global Perspectives and Project Work;
- ***Twenty training sessions*** for **Grade 11-12** teachers of Computer Science, Economics, Kazakhstan in the Modern World, Kazakh Language (L1), Russian Language (L1), Kazakh Language (L2), Russian Language (L2), English Language, Literature (in Kazakh), Literature (in Russian), Mathematics, Biology, Physics, Chemistry, and Physical Education.



The development of teacher instructional resources developed by practicing teachers is another way of supporting teachers in the context of implementation of the educational programme.

During the reporting period, six instructional handbooks on the NIS Program and one on trilingual policy were developed and handed over to our schools. All handbooks are available at *cep-forum.nis.edu.kz.*

A handbook on homework management for NIS students were developed in order to contribute to the effective management of the homework assigned. This document gives detailed information on learning objectives, functions, scope and types of homework activities for all subjects. It suggests methods of optimising the scope of homework activities through cross-curricular integration and horizontal/vertical planning.

Research capacity development

In 2017, a professional development workshop featuring international expert, **Tim Oates**, Group Director of Assessment Research and Development at Cambridge Assessment, was delivered with the aim of supporting CEP employees in developing their research skills. ***Twenty-four employees were trained and certified at part of this workshop.***

A **workshop for subject specialists and editors** featuring experts from Cambridge Assessment was organized with the aim of organising an effective textbook review process. The workshop aims to provide CEP with **capacity building** on primary and secondary textbook review, based on the analysis of previous reviews.

Twenty-five employees have been trained. All participants successfully completed the courses, receiving certificates upon completion.

TRILINGUAL POLICY IMPLEMENTATION

The trilingual education model is in operation in 19 NIS schools. This model focuses on building knowledge and competences, which contribute to the overall development, socialization and mobility of school leavers.

Monitoring of trilingual education implementation in NIS schools

The monitoring of trilingual education implementation helps spotting factors that enhance and impede successful policy realization in timely manner.

Within the framework of the monitoring, CEP conducted three research studies using mixed methods of data collection: online survey among local and international teachers, lesson observations and interviews with teachers.

The results of research were used during the revision of subject programmes; used to develop training materials; and, were presented at conferences.

During the annual international conference **ECER-2017** dedicated to 'Reforming Education and the Imperative of Constant Change: Ambivalent roles of policy and educational research', the Centre of Educational Programmes presented the results of two research projects:

1. **Implementation study of subject and language integrated teaching and learning in NIS.**

The study aimed at determining positive aspects and challenges for teachers during implementation of CLIL methods for teaching subjects in second or third languages.

Five hundred and eighty three teachers from 19 Intellectual schools teaching non-language subjects in second and/or third languages participated in the online survey. Thirty lessons (Grades 7, 10, 11) in four NIS schools have been observed. Forty local and international teachers have been interviewed.

Teachers gave positive feedback on their own teaching, follow teaching principles, and recommendations given in the guidance on trilingual education.

Non-language subject teachers use exercises and tools, contributing to the development of language skills in students, actively. For example, the pre-text and post-text division of complex material; adapting materials according to the language level of students; using new words and word combination in various contexts; providing useful language patterns for students to apply in writing and speaking; and, using vocabulary accessible for students, and so on.

According to the monitoring results, teachers of humanitarian subjects show more confidence in applying CLIL from the last year. Whereas science and mathematics teachers have not mustered the method well-enough yet.

The challenges faced were connected to i) insufficient knowledge of English among science and mathematics teachers; and, ii) science and mathematics teachers perceiving themselves exclusively as subject specialists, paying little attention to developing language skills.

2. **Using differentiated instructions for reading that meets the learning needs of gifted students in NIS in Grades 10-11.**

This research project was aimed at identifying challenges related to learning objectives related to reading skills in English lessons. These are challenges that teachers, and consequently students face when working with differentiated activities. A total of 1173 students and 39 teachers participated in the online survey. Eight teachers were interviewed and 15 lessons observed.

The results of the study show that majority of NIS students (50% Grade 10 students and 67% Grade 11 students) prefer challenging activities and achieve learning objectives on reading easily; 60% respondents find that the lesson reading materials contribute to reading literacy and critical thinking and help them pass international exams (such as IELTS and SAT). However, one in three teachers flounders in making differentiated activities on developing high order skills, and correct text selection.

The results of the study were taken into account in the following activities: developing the content of summer training sessions for English teachers; determining the content of online courses and webinars; developing the instructional guide, *The Updated English Programme: Differentiation in Teaching, Reading and Writing for Secondary School Grades 5 and 7 for Mainstream Schools*.

The research project, **'The Effective Use of Authentic Texts in the Development of Communicative Skills in Students'** was presented at the **IX NIS International Research-to-Practice Conference 'Values, Wellbeing and Innovation for the Future of Education'**.

The project examined the effectiveness of authentic texts in teaching Kazakh in classes with Russian medium of instruction, since this is one of the effective methods of language immersion.

146 Grade 8 students and 14 teachers participated in online survey of this study. Researchers interviewed teachers, students and school administration.

The results of the study shows that 90% of teachers use authentic material on lessons, 63% of students understand information of various nature in Kazakh.

However, teachers do not use effective methods towards authentic material very often and do not follow the steps of working with text correctly. Working with text episodes remains a greater challenge for teachers.

Identified problems helped to establish a lexical minimum for a topic and list recommended genres of literary and authentic texts in the medium-term plans in order to achieve objectives and develop skills successfully. Teachers received trainings on working practices with authentic material, with full demonstration of workflow with an authentic text.

Recommendations from all studies are reflected in the 'Instructive and methodological letter on the educational process management in NIS for 2017-2018 academic year.'

Professional teacher development in terms of trilingual education

To improve teachers' competence in using CLIL methods **four** workshops featuring international experts were conducted for **115** NIS teachers. **Sixty-eight** of them were trained as CLIL trainers capable of employing cascade teaching methods.

Diagram. The number of CLIL trainers trained over last three years

One hundred and forty-one CLIL trainers were trained during the reporting period. They developed workshop modules for cascade learning.

Our scientific advisor, Peeter Mehisto (Institute of Education University College London) developed a teaching handbook called ***'Scaffolding in CLIL Contexts',*** which is useful both for language and non-language subject teachers.

This handbook contains practical examples of support for students in learning the subject content of non-language subjects through students' second or third language.

The Development of Multilingualism in Education

In accordance with instructions given by the Head of State at the Supreme Board of Trustees meeting, Nazarbayev Intellectual Schools has started working on the teaching of a second foreign language.

The teaching of a second foreign language as an obligatory subject opens up additional opportunities for students who want to continue their education at leading international universities.

German, French, Chinese and Korean have been selected as the compulsory second foreign languages after a thorough analysis of the European and NIS experience in teaching a second foreign language as an elective course.

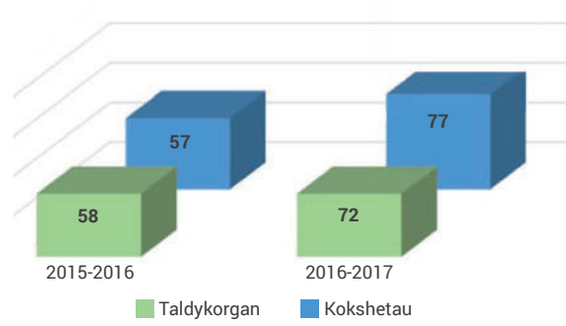
To promote effective teaching, methodological recommendations on second foreign language teaching have been developed.

An agreement has been reached on cooperation with official representatives of Goethe Institut, ZfA Kazakhstan, French Alliance, Campus France Kazakhstan Bureau, Confucius Institute and Korean Cultural Centres in Kazakhstan.

The Implementation of a Kazakh Language Immersion Project

In the 2016-2017 academic year, **60** children from our kindergarten and **149** from primary school programmes participated in a Kazakh language immersion project.

Diagram. Primary grades population



Primary school students

At present, children of 11 different nationalities are being taught in classes and groups using immersive learning.

Annual monitoring is an integral part of the project implementation process. The monitoring uses various research methods, including observation, conversation and questioning.

The project coordinators and teachers note that year-by-year students are becoming more actively engaged in conversation, and are understanding the meaning of texts more quickly.

This is also confirmed by the results of six monthly diagnostics that are aimed at determining students' Kazakh language level. It should be noted that each participant has a personal card where the results of each diagnostic test is recorded and monitored over a five-year period.

A comparison of the trend for students' Kazakh language levels in 2015-16 and 2016-17:

- stable a steady increase in vocabulary acquisition;
- better pronunciation of specific sounds of Kazakh language;
- greater grammaticality;
- better comprehension of texts read by other people; and,
- improved ability to speak correctly, clearly and logically.

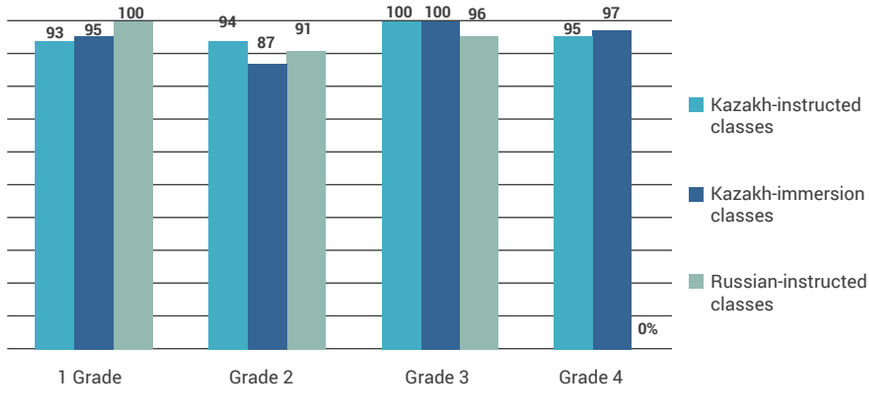
One of the goals of monitoring was to study the level of mastery of subject content knowledge.

As you can see from diagram below, the percentage of students meeting the baseline standard in immersion classes ranges from 87% to 100% thereby fulfilling the quality assurance standard.

Comparison of learning outcomes among parallel classes shows that the academic attainment of students in immersion classes is comparable to the standard of education of students who study in the first language.

The preschool language immersion programme in Taldykorgan has had positive results over the five years of its operation. The level of attainment for preschool children relates to the skills that they form while acquiring content and is measured by corresponding indicators.

Diagram. Indicators of the quality of knowledge in immersion classes (in %)



Monitoring has shown the acquisition of Kazakh through the language immersion method for preschool and primary education to be effective.

3.1.2. INTERNATIONAL BACCALAUREATE PROGRAMME

International Baccalaureate programmes are taught at NIS Astana (MYP and DP) and at the International School of Astana (PYP and MYP). *www.ibo.org*

During the reporting period, NIS Astana undertook extensive work on the MYP components:

- **Seven cross-curricular units** for conceptual and cross-curricular study were developed and implemented;
- **Eighty-two strategies** for research skills teaching have been developed;
- **Scheduled service-units** for public service development have been implemented;
- **Sixty social projects** in Kazakh and Russian were completed; and,
- **One hundred and thirty-six personal projects** in Kazakh, Russian and English were completed.

The formal IB MYP verification process provided positive feedback on 16 subject unit plans and two cross-curricular units. Analysis of the feedback received was undertaken. School-based assessment forms for unit plans were developed. This form contributed to the level of teaching.

NIS is continuing to implement international assessment principles thanks to the MYP's external eAssessments. The high level of advanced planning for external assessments had a positive impact on student attainment. Compared to the last reporting period, the results for many subjects have improved.

It is worth noting that the school's results for Mathematics and Design were above the international average.

Diploma Programme external examination results have been received, and necessary adjustments made to each course plan following feedback from the International Baccalaureate.

The following documents have been developed and approved:

- A Diploma Programme calendar of events including due dates for internal assessment;
- A subject programme for standard level Modern History of Kazakhstan; and,
- A subject programme for standard and advanced levels.

At the same time, NIS Astana continues sharing its experience with the International School of Astana, which has received authorization for Primary Years' Programme (PYP) and currently has candidate status for the Middle Years' Programme (MYP).

3.2. PASTORAL WORK

Pastoral work at NIS is regulated by documents approved by the NIS Board of Trustees and NIS Management Board *(see the Appendix)*.

The values-based approach lies at the heart of our educational system and is aimed at developing the idea of national identity found in the ***Mangilik Yel***, promoting Kazakhstani patriotism, civil liability, education of an independent, highly moral person.

A 'Heirs of the Great Steppe' a creative project-based concert of NIS students dedicated to the 25th anniversary of Kazakh independence.

The final NIS concert took place in February 2017 and **included** choreographed performances 'The symbol of 20 NIS schools' and 'The Great Silk Road oriental bazaar'; shadow theatre; dombra orchestra; a choir chorus; a drum march; and, a dance flash mob. A charitable fair called 'A Street of Craftsmen' with masterclasses in pottery, drawing, felt work, making chia and national dolls, carpet weaving and embroidery was **organized**. **The academic projects and creative works** of NIS students captured the audience's interest.

'The Heirs of the Great Steppe' performance held by NIS students in Uralsk, Atyrau and Aktau was a great success.

As part of the implementation of a programme entitled 'The Way Forward: The Modernization of Kazakhstan's National Identity' initiated by the Head of State, NIS Aktau presented their project, **'The Nursultan Nazarbaev Model: Intellectual Schools'** at the International Youth Forum of the Caspian states 'Zhas. Zhalyn. Zhangyru'. Young leaders from Azerbaijan, Russia, Turkmenistan and Kazakhstan took part in this forum.

The visit of 300 participants in the forum and 100 additional invited guests to NIS Aktau was the most notable event of the forum. The work of NIS schools - its curricula, elective courses, social projects and practices, and the research projects of students - were introduced to local and international delegates. Participants also took part in TEDxNIS entitled 'Ideas worth spreading'.

The robotics pavilion featured a variety of projects, including the following:

- QamQare a GPS receiver for sending SOS messages with accurate geolocation by NIS Almaty student, *Diyara Beisembekova*, the Grand Prix winner at TechNovation Challenge San-Francisco;
- 'Robot First Global Challenge' by NIS Almaty student, *Daniyar Turgambayev*;
- 'SMART-skullcap for blind people' by NIS Aktau student, *Galammadin Askaruly*;

- Robotic mobile hydroelectric power station by NIS Uralsk student, *Asan Bekkaliyev*;
- 'Dancing robots' by NIS Semey student, *Adil Ordaev;* and,
- Robot halting desertifications by NIS Atyrau student, *Aynur Adaybaeva*.

A series of traditional **VII Nauryz meetings** 'Science without Borders' took place in March 2017.

One hundred and sixty students from NIS and comprehensive schools with high predicted ability in mathematics and science participated in the meetings.

Young Kazakhstani and international scientists from Nazarbayev University, South Korea and Hungary conducted masterclasses with demonstrations of scientific experiments on the following topics:

- New technologies in medicine;
- Biotechnology and medicine;
- Human Genetics;
- IT technology;
- Integration of the universe fundamental laws;
- New approaches of studying medicine; and,
- STEAM-education.

Within the framework of these meetings, students presented their projects devoted to EXPO 2017 on innovative ideas for alternative energy sources, green economy development, and the STEAM concept. For seven consecutive years, Nauryz meetings have encouraged comprehensive school students to participate in NIS initiatives relating to scientific projects and technological creativity.

In order to form spiritual and moral values an annual area study and research expedition **'Bowing to the Motherland'** was organized in the framework of the **State Programme for the Development of Education and Science 2016-2019** and the **'*Ruhani Zhangyru*' programme**. The expedition was dedicated to the 100th anniversary of the Alash-Orda. The number of participants reached 240 students and 40 teachers.

One of the significant results of the project is the participation of NIS Aktau students in fieldwork at the archaeological excavations of the 'Altyn Kazan' mortuary complex.

A study of the tomb, the restoration of a dwelling located at an altitude of 150-200 meters, relating to the III-V centuries AD, were conducted under the supervision of scientists.

Students discovered the skeleton of an ancient aquatic animal during the expedition to the Usak mountains. Scientists suggested that the fossilized skeleton belongs to a giant animal that inhabited the deep ocean 38-55 million years ago.

A database of regional routes and video maps for each region is being developed within the framework of the '*Ruhani Zhangyru*' programme to intensify research and local lore activities. These will contribute to study of economic features, historical and cultural heritage, natural resources and reveal the features of these regional routes.

The **'Two Weeks in the Village' social project** has played a great role in connecting children with the origins of their traditions and national culture, and inculcating spiritual values of the Kazakh people to students.

'Two Weeks in the Village' was one of the best regarded NIS projects in 2017 according to our students. A total of 12,351 students took part in this project.

Forty students and forty national and international teachers from NIS featured in the Kazakhstan-2050 national movement implemented an educational project, **'Intelligent Generation'** as part of the celebrations for the Day of the First President. The following masterclasses were organised for **6000** students from national comprehensive schools: 'Competitiveness; Pragmatism; The Cult of Knowledge', and 'Kazakhstan is a Friendly Country'. **'Heirs of the Great Steppe'**, a simultaneous large-scale **flash mob featuring 2000 dombra players** took place in all regions of the country. They played famous traditional pieces including 'Saryarka; Balbyrauyn; Adai' by Kurmangazy, 'Erke Sylkym' by Abdimomyn Zheldibaev, 'Nauysky' by Dina Nurpeisova, 'Ata Tolgauy; Alkissa; Akku' by Nurgis Tlendieva. An NIS Pavlodar student, Zhanat Olzhas sang an original national song, 'Elima Sulem'.

At the same time, pastoral work-related projects such as 'The history of a hundred kyuis; Kazakh songs; Ten days at my parents' work; Take your child to work; Service to society; TEDx NIS', and 'Wikipedia' contributed to the formation of spiritual and moral values consistent with the National Patriotic Idea, 'Mangilik El' among students.

According to the survey, 98% of NIS students in 2017 were involved in pastoral work-related projects that nurtured their pride in their country and taught them about the importance of taking responsibility for its future.

3.3. SUPPLEMENTARY EDUCATION

NIS schools organise elective courses, and the summer school and partner school projects to promote students' holistic, providing many opportunities for students as extracurricular activity.

3.3.1. ELECTIVE COURSES

Elective courses help students develop their engineering and entrepreneurial skills, and skills of mathematical modelling, creative writing, projectwork, and artificial intelligence modelling.

During the reporting period, elective courses were organized in schools, inside and outside the country.

Six hundred and sixty elective courses were provided **by our schools.** They have four main strands:

1) Subject knowledge development;
2) Research skills development;
3) Language skills development; and,
4) Preparation for international examinations.

Massachusetts Institute of Technology (MIT), United States and Tel Aviv University, Israel conducted courses **in Kazakhstan** involving 80 NIS students.

Elective courses by MIT

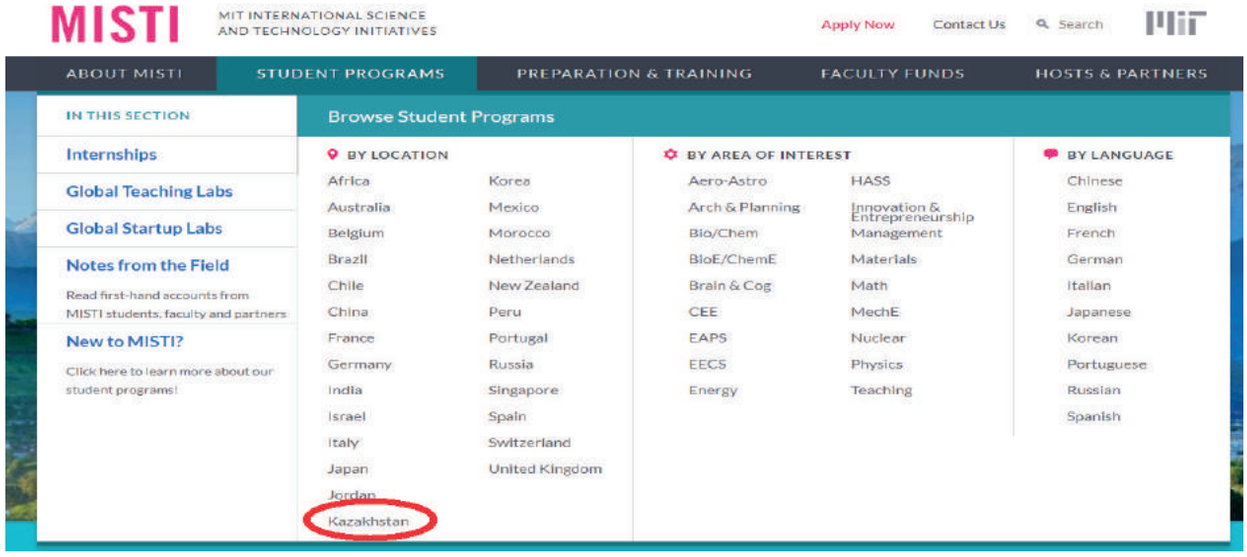
The Global Teaching Labs project by MISTI Kazakhstan was implemented in January 2017 at NIS Karaganda. Sixty students had the opportunity to expand their knowledge of Chemistry, Physics, Robotics and English.

The programme has been conducted in 26 countries (including the United Kingdom, France, South Korea, Singapore, Germany, Israel, Italy, Spain and Mexico). In 2017, Kazakhstan for the first time joined the list of participants.

«Massachusetts Institute of Technology (MIT) is one of the most prestigious technical universities a leader of the world rankings implements a programme 'Global Teaching Labs' within the framework of MISTI International scientific and technical initiatives by MIT for senior students of undergraduate, graduate and doctoral programmes. 'Global Teaching Labs' MISTI Kazakhstan programme aims to transfer knowledge of students to students around the world

http://misti.mit.edu/student-programs

http://misti.mit.edu/student-programs/location/kazakhstan



The features of MIT courses include the following:

- a focus on practical problems;
- encouraging students to think of global problems and ways of solving them with the help of science; and,
- the demonstration of innovative, cutting-edge MIT research and the latest developments presented in scientific laboratories around the world.

Chemistry course

Khan Sami, an MIT doctoral student in Mechanical Engineering, and the author of the Learn to Love Chemistry programme, conducted the chemistry course.

The programme included a large number of experiments and demonstrations of everyday phenomena related to chemistry and new research areas. The course is mainly focused on applied chemistry in energy, environment, medicine based on practical skills development.

Our students conducted laboratory experiments to create water-repellent, non-combustible materials.

Khan Sami, the participant of the program, was the first at the video contest among MIT students, who participated in the MISTI Global Teaching Labs in 2017.

http://misti.mit.edu/phd-student-mit-inspires-kazakh-kids-love-chemistry

Physics course

Brinna Downey, an MIT student studying the Earth, atmosphere, planetary science and physics, conducted a physics course.

The course was focused on in-depth study of the physical processes associated with our planet.

The course established the basic concepts of physics, manifested in the world around us, and included experiments with improvised materials.

Robotics course

Asra Ali, an MIT mathematics student conducted a course on robotics.

The course is a synthesis of mathematics and robotics.

During the course, students learned the basics of mathematical scheme analysis, solved programming problems, learned to develop creative patterns, and worked on three projects: Robot Hand, Invisible Guard, and Smart Home. To create these projects students used alarm sensors in different parts of the house. They also created a water pump for extinguishing fires that was triggered by a temperature sensor alarm.

Students highly appreciated the work of MIT students and the courses.

96% of students chose Mathematics or Science subjects that they had studied as part of MISTI 'Global Teaching Labs' programme. Eight students have been preparing for admission to MIT purposefully.

The students organised a SAT preparation session for Grade 11 students, and told them about MIT programmes and the opportunities for admission.

MIT students noted the high level of motivation of NIS students and good academic knowledge in science related subjects.

NIS decided to continue work in this direction due to the positive results of the MISTI Kazakhstan Global Teaching Labs project.

In 2018, this project will be implemented in NIS Karaganda, NIS Semey and NIS Petropavlovsk. Starting from 2019, it will be implemented with the participation of young teachers at all NIS schools.

Elective courses by Tel Aviv University

20 NIS students and **10 comprehensive school students** participated in the Entrepreneurship Education for Students course as part of the Momentum programme that took place at NIS Astana PhM from October to December 2017.

The course is to encourage students to study business skills, immerse themselves in the entrepreneurial environment and develop project skills.

'The Friends Association of Tel Aviv University is an organization linking foreign academic communities with Tel Aviv University, which is one of the most sought-after universities, and biggest patent holder university in Israel. The Association has offices in more 20 countries and aims at developing entrepreneurial education and the formation of an entrepreneurial culture'

The features of the course were as follows:

- immersion into a business environment featuring international and national experts;
- teaching students the basics of effective planning, and the implementation and evaluation of their own projects;
- practical experience of running their own business project.
- практический опыт ведения собственного бизнес-проекта.

The course had theoretical and practical parts.

Our two invited Israeli experts - Elena Donets, Director of the Centre for Entrepreneurship at Tel Aviv University, and Marina Tsimbler, a project-based learning coach - delivered the intensive theoretical sessions. Students learned to create and promote their own business projects, venture capital funds, and modern lean startup models.

Students met well-known entrepreneurship experts - Semen Litsin, creater of the modern flashcard, and Igor Nusinovich, the founder of successful global startups - as well as young Kazakhstani entrepreneurs, Arslan Darimov, Mukhtar Kuanyshbaiuly, Bagdat Uapov and Dagara Davletova.

Students rated the course highly. They were impressed by the high level of knowledge of the experts and their unique projects promotion method. The teaching methodology of the course is to be adopted by NIS in 2018 for stage-by-stage implementation by local teachers in all NIS schools.

One hundred and six students took part in **three extracurricular elective courses** based at three leading USA higher education institutions: Stanford University, Johns Hopkins Centre for Talented Youth, and Columbia University. Eighty of them were from socially vulnerable and large families.







Table. Extracurricular elective courses

№	Extracurricular elective courses	Number of students
1.	Courses at Johns Hopkins Centre for Talented Youth (USA): High School Biology; High School Chemistry; High School Physics; Mathematical Logic; Electrical Engineering; Fundamentals of Informatics; Probability and game theories.	20
2.	Courses at Stanford (USA): Cryptology; Software Engineering; Science and Humanities; Entrepreneurship; Arts; Creative writing; Medicine and business.	41
3.	Courses at Columbia University (USA): Critical thinking through reading and writing; Web applications with Python; Intensive courses in modern chemistry; Introduction to business, finance and economics; Introduction to chemical engineering, computer modelling of proteins; Introduction to physics; Research in theoretical and experimental physics; Media and politics; Stock market; Introduction to biochemistry: food chemistry; Introduction to C programming; Introduction to neurology: understanding the brain; Introduction to engineering: transforming sun energy; Astronomy and astrophysics; Research in genetics and molecular biology; Mathematical training camp for string theory adherents.	45

3.3.2. SUMMER SCHOOL

To develop students' academic potential and project exploration skills, a summer school was launched for both NIS students and students from comprehensive schools.

In 2017, the following summer school courses were offered:

1) free courses for 7554 vulnerable students, of whom 6821 were NIS students, and 733, students of comprehensive schools;

2) fee-based courses for 433 students, of whom 213 were NIS students, and 220, students of comprehensive schools:

- STEM Robotics;
- English;
- The Wonders of Biotechnology;
- Design Thinking;
- Beautiful Functions and their Graphs;
- Construct a Robot;
- Physics around Us; and,
- Chemistry in Everyday Life;

3) free and fee-based courses for 341 students involving six teachers from Stanford University and Johns Hopkins Centre for Talented Youth, of whom 332 were NIS students, and nine, students of comprehensive schools:

- Creative Writing;
- Software Engineering and Video Game Design;
- Environmental Science;
- Entrepreneurship;
- Cryptology; and,
- English Communication for STEM;

4) a free Mathematics course for 58 NIS students involving a teacher from the Specialized Educational Academic Centre of A.N. Kolmogorov Boarding School administered by Moscow State University; and,

5) language immersion courses for 634 students (180 in Kazakh, 40 in Russian, and 414 in English) who demonstrated an insufficient level of language proficiency upon admission to Nazarbayev Intellectual Schools.

The summer school aims to promote research activity, develop academic potential, and encourage comprehensive social and aesthetic development of students from NIS and national educational institutions.

Following suggestions made by students, their parents and teachers, in 2018, NIS plans to have

summer school courses in Robotics, English and Creative Writing, Basic Programming, and Mathematics among other things, inviting teachers from international universities.

3.3.3. PARTNER SCHOOLS

To develop students' intercultural communication, global thinking and tolerance, NIS continues to implement its Partners Schools Project which includes a student exchange programme.

In September 2017, eight students from NIS Almaty PhM took a course in **Ernst Abbe Gymnasium (Oberkochen, Germany).**

> *'Ernst Abbe Gymnasium is a guardian of the best traditions of German education and modern world technologies. Since 1999, the Gymnasium has been cooperating with schools in Italy, USA, France and Kazakhstan.*

During their visit, students were immersed into the language environment, acquired research skills, and shared their knowledge. In the course of their studies, students attended science and mathematics classes. As part of the Local Products Projects, students took tours around German production sites, including the Museum of Bread Culture, a mill, a meat packing factory, a milk production company, the Ritter Sport chocolate factory, a medical equipment manufacturer, and Carl ZeissAG optics manufacturer.

At the end of students' visit to Carl Zeiss AG, two students suggested further cooperation on research projects.

Beyond that, **in September students from Hannover Region International School (Hannover, Germany)** visited NIS Astana PhM. They studied together with NIS students and lived in their families. .

> *Hannover Region International School is an international school that aims to provide high-quality international education in the creative environment, encourage students to express their views, values, traditions and culture freely.*

On a return visit in October, ten NIS students went to Hannover. They worked on project-based learning (PBL) projects through language and cultural immersion.

In April 2017, NIS Pavlodar and the Specialized Educational Academic Centre of the Kolmogorov Boarding School administered by Moscow State University (hereinafter — **Kolmogorov SEAC**) signed a Memorandum of Cooperation under which it is planned to exchange experience and knowledge accumulated in corresponding areas of activities through planning different events for students and teachers.

> *Specialized Educational Academic Centre of the Kolmogorov Boarding School administered by Moscow State University implements programmes in general secondary education with the advanced study in Mathematics, Physics, Chemistry, Biology and Computer Science. There are faculties of vocational and general subjects at school.*

Under the memorandum of cooperation, in December 2017, **10 students** of NIS from Pavlodar visited the SESC named after A.N. Kolmogorov. NIS students studied together with SESC students under the specially designed programme.

In December 2017, **10 students** from NIS Astana PhM participated in a course at **Birchwood High School (Bishop's Stortford, United Kingdom).**

> *Birchwood High School is an academy for gifted students established in 1991. According to A-Level programme, the academy aims to develop students' individual potential, high academic performance and to define their professional orientation.*

This exchange programme encouraged students to immerse into the language environment, make a research experiment in STEM laboratories, develop global thinking and communication skills.

Since 2017, NIS has been actively working on cooperation with partner schools:

- **AYB School (Armenia)** - students conducted projects on intercultural dialogue and children's rights;
- **Nueva School (USA)** – students conducted an investigation into the Great Silk Way and its historical role, economic and political integration of the world economy;
- **Suzhou Foreign Language School, Jiangsu Province (China)** within the framework of IB Diploma Programme.

The Partner Schools Project encourages NIS students to develop scientific research skills, tolerance and critical thinking. Schools are continuing to partner remotely with international students when they express an interest in conducting research on Kazakhstan's historical and cultural heritage.

3.4. MEDICAL AND PSHYCOLOGICAL SERVICES

3.4.1. PSYCHOLOGICAL SERVICES

The documents governing the operation of the NIS Psychological Service are the NIS Student Protection Policy, approved by the NIS Management Board on 18 May 2016 (Minutes No. 19), and the NIS Psychological Service Model Provision, approved on 9 September 2015 (Minutes No. 47).

During the reporting period, NIS psychological service continued to provide psychological support for the learning process:

- supporting Grade 7 and transfer students in their adaptation;
- identifying and supporting students who have academic, social and emotional, behavioural difficulties (children in need of increased attention);
- supporting students and teachers in managing pre- and post-examination stress; and,
- helping students in choosing their future career.

Following their participation in a training course on educational kinesiology and on coaching children and teenagers, NIS psychology teachers introduced approaches into their practice.

New forms of psychodiagnostic procedures were introduced during the reporting period. They involved counsellors, subject teachers, boarding facility housemasters, extended education teachers, and students' parents and guardians.

Psychodiagnostics helped identify students' predominant styles of information perception, thinking, and personal characterological features. It developed a basic psychological students' profile, helped students identify their strengths and weaknesses, and accept their individuality.

Adaptation programmes were developed for Grade 7, transfer and reserved students. A Team Building course; an adaptation session called 'Hello, it's me'; and, events promoting the psychological service - Class-CLASS; I Am Nearby; My Classmates and Me; Our Class Planet; among others - helped students team up with new classmates, close the gap between old and new classmates, and make friends with roommates.

The promotional event, Me and My Surroundings was held to help students adapt to living in boarding facilities with unfamiliar students.

Every NIS school held events promoting student psychological wellbeing, including the following: Exchanging the Negative for the Positive; Psychological Barriers; NIS Horoscope; Worry Calmly, Exams Are Coming Soon; IELTS Is a Target, group and individual relaxation classes using the equipment from the psychological release room.

To ensure safe social networking, 1540 students were surveyed, and psychological games and promotional events were held to help students recognize the negative effects of social networking websites.

In addition, NIS used the following events and psychological games to help Grade 9-12 students choose their elective subjects, identify their preferences and aptitudes, and select their future career: An Atlas of Emerging Jobs; Kaleidoscope of Professions; Job Selection; Road; and, Perspective.

In Grades 10 and 12, in order to help students reduce the stress associated with examinations, NIS employed group consultations, relaxation exercises, and events promoting psychological wellbeing. The programme included the following events: IELTS Is a Target; How To Manage Stress; and, Brain Gymnastics exercises.

School psychologists from NIS Taraz, NIS Petropavlovsk, NIS Semey and NIS Karaganda developed programmes for Grade 7-12 students who have difficulties with self-management and planning. Furthermore, NIS held the following workshops on time management for school counsellors: 'What Is It?'; Time Research; Goal Setting; Important and Urgent.

NIS psychological services provided 547 students with individual support.

Working with school pedagogical staff members

NIS created an electronic database of students' profiles with recommendations for teachers, advisers and educators on differentiation in teaching and interaction with students.

Six hundred and eighty-seven teachers held a training session where they played psychological games to team up with their colleagues and

interact constructively with students and their parents. Thereafter, teachers were trained how to manage stress at work, develop skills how to restore efficiency quickly and level up, to find and strengthen resources to prevent professional burnout.

Five hundred and eleven parents held group discussions and consultations about the psychoemotional state of their children, and age-appropriate approaches to communicating with students.



New teachers held a training session on teambuilding entitled 'We Are a Team'.

All NIS schools held workshops to develop teachers' constructive and conflict-free communication skills with students and parents, using the 'I am a message' technique, and the asking open-ended questions approach in certain pedagogical situations.





3.4.2. MEDICAL SERVICES

There are medical centres and dental offices in **all NIS schools**. Their operation is regulated by the NIS Medical Service Model, **approved by the NIS Management Board on** 14 December 2015 (Minutes #62) (as amended on 29 September 2016, Minutes #47)

In total, 22 paediatricians, 20 dentists, 41 school nurses, 51 boarding school nurses, and 21 dietitians work in the NIS schools.

During the reporting period, there were about 40,000 registered visits by students to the Medical Service, of which more than 38,000 were visits to the paediatrician, and about 2000, to the dentist. Analysis of the incidence rate among students based on medical certificates showed that the main groups of diseases among NIS school students are respiratory diseases (such as ARVI, tonsillitis, pharyngitis, sinusitis and rhinitis).

School health workers carried out preventive medical examinations and vaccinations of students, and provided health education.

Over 13,500 students passed **preventive medical examination**. More than 11,000 students undertook **preventive dental examinations** in the NIS schools.

In accordance with the **National Vaccination Schedule** students are vaccinated against diphtheria, pertussis and tetanus (Exhausted diphtheria tetanus vaccine modified, Adsorbed acellular pertussis-diphtheria-tetanus combined vaccine fluid), tuberculosis (BCG, tuberculin diagnostics), measles and rubeola (measles, rubeola and parotitis vaccine), influenza and viral hepatitis A.

The main reason for the incomplete coverage of students with vaccination is parents making an informed decision to refuse vaccinations.

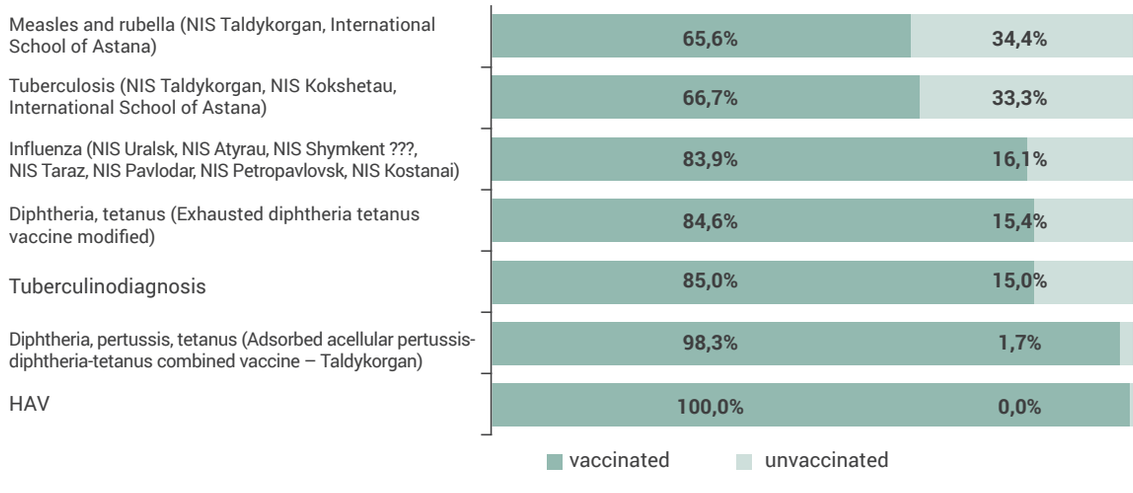
Health education in NIS schools was conducted on the following topics:

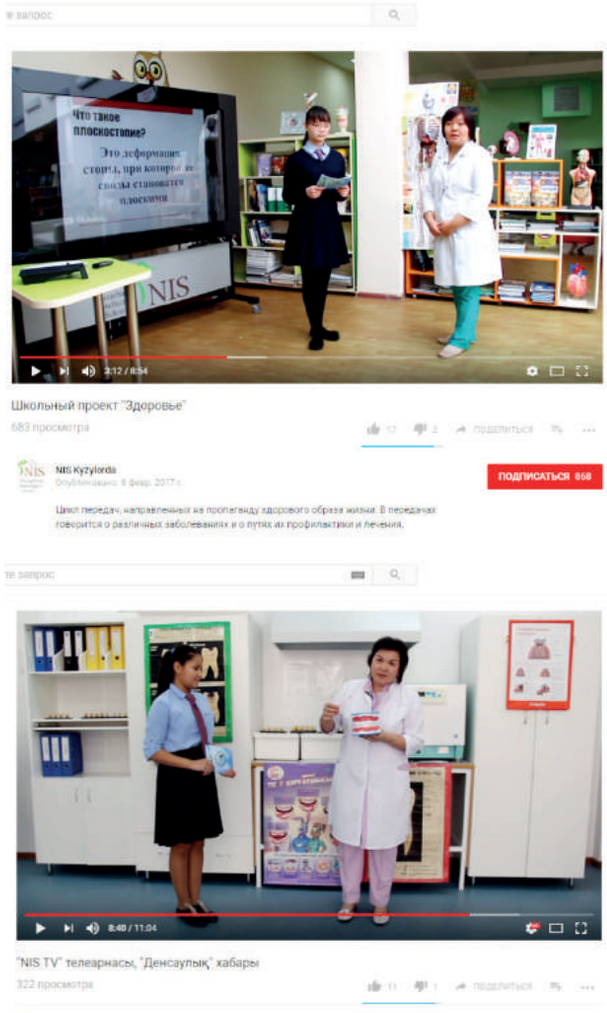
- the prevention of winter and other infectious diseases;
- maintaining a healthy lifestyle,
- the prevention of bad habits;
- a healthy diet; and,
- first aid.

Health education for students and school staff was provided in the form of lectures and seminars, to which specialists from (i) organizations tasked with ensuring the sanitary and epidemiological wellbeing of the population, (ii) centres for the formation of a healthy lifestyle, (iii) disaster medicine centres, (iv) health centres, and (v) other public organizations were invited. Also, sanitary bulletins were issued; debates on healthy living; health weeks; and other activities were organised.

So, for example, video materials from the **school project, 'Health'** were published on the official *youtube.com* channel of NIS Kyzylorda in 2017. The videos discussed common diseases among schoolchildren, as well as the methods of their prevention.

Figure. Vaccination schedule of NIS students





In October 2017, NIS Atyrau, together with employees of the municipal children's dental clinic and the students of Atyrau Medical College, ran a campaign, **A Shining Smile for the Whole Life** intended to cultivate the skills of a healthy lifestyle.

As part of the campaign, the students were told about the prevention of infectious diseases, demonstrated how to brush their teeth and wash their hands properly. At the end of the event, sports competition in athletics was organised between students, teachers and college students.

In October-November 2017, NIS Kokshetau conducted two events, A Healthy Smile, and Rules of Rational Nutrition for grades 1-3 to promote healthy living and wholesome diets among primary school students.

In September 2017, NIS Shymkent ChB organised a 'vitamin fayre' with the participation of school psychologists. This is an annual event where students are provided with information on the benefits of eating fruit, and what students' fruit preferences can tell us about their character and personality.

3.5. EDUCATIONAL RESOURCES

3.5.1. NIS PROGRAMME: TEXTBOOK DEVELOPMENT

NIS developed new textbooks for grades 7-8 in order to meet the requirements of the NIS Programme. The NIS textbook development process is regulated 'The Regulations on NIS Textbook and Curriculum Development, Review, and Approval' (NIS Management Board Minutes No. 32, 8 July 2014).

This work was undertaken in cooperation with our strategic partner, University College London Institute of Education, with training seminars and remote consultation provided by the strategic partner.

Forty-nine authors and **18 lead authors and/or editors** were involved in the textbook development project for Grade 7, while a further **36 authors** and **15 lead authors and/or editors**, for Grade 8. The authors learned about active learning,

Table. Textbook development for NIS schools

Class	Start Date	End Date	No. of Subjects	No. of Textbooks	No. of Textbooks (incl. language variants)
Grade 7	2014	2018	**9 subjects:** Mathematics (Part 1), Physics, Chemistry, Biology, Arts, Computer Science, Geometry, History of Kazakhstan, World History	23	46
Grade 8	2016	2019	**8 subjects:** Physics, Chemistry, Biology, Arts, Computer Science, Geography, History of Kazakhstan, World History	12	24

developmental psychology and pedagogy, while the editors received training on editing techniques.

The tasks in the **textbooks** are differentiated by the level of knowledge or skill required, and focus on improving students' functional literacy.

The materials stimulate students' interest in knowledge acquisition. Presented in various formats - be it drawings, photographs, tables, graphs, diagrams or infographics - they help students develop their information processing skills.

The majority of the tasks are aimed at developing communicative skills, which provides opportunities to organise learning activities in pairs or groups.

The Teacher Handbook contains lesson scenarios based on the textbook spreads. In order to ensure differentiated learning, additional tasks, those which were not included in the Student Book, are included in this component of the textbook.

In 2017, in order to determine the degree of alignment of textbooks and the subject programmes as well as the consistency between the components, the textbooks in 3 subjects **(Mathematics, History of Kazakhstan and World History)** for Grade 7 were reviewed by CAIE consultants.

As part of the CEP capacity building, the review of textbooks in **Chemistry, Physics, Biology, Computer Science, Arts, Geography, History of Kazakhstan and World History** for Grade 8 was carried out by CEP subject coordinators in cooperation with the CAIE consultants. During this process, CEP was provided with the review forms and evaluation reports, which were taken into account in improving the textbook spreads.

Piloting the textbooks for Grade 7

The process of approbation of a range of textbooks for Grade 7 was started in Intellectual schools in the 2017-2018 academic year.

Textbooks in **Mathematics, Computer Science, History of Kazakhstan, World History, Arts, Chemistry, Biology, Geography, Physics** undergo the approbation process in 19 Intellectual schools. More than 430 teachers of Intellectual schools are involved in the approbation of (piloting) textbooks.

To carry out the approbation, the total number of 20 888 copies of textbooks in 9 subjects was made. Also, electronic versions of textbooks in the Kazakh, Russian and English languages are available on the website *www.sk.nis.edu.kz* for teachers to use in the educational process.

Based on the results of work:

- **23 textbooks** in 9 subjects for Grade 7 in the Kazakh, Russian and English languages undergo the approbation process in Intellectual schools;
- **12** textbooks in 8 subjects for Grade 8 have been reviewed, the content of textbooks is being revised on the basis of review results.

3.5.2. REPORT ON THE WORK OF NIS LIBRARIES

The development of our library collection is governed by 'The NIS Branch Library Use Regulations', approved by a decision of the NIS Management Board from 23 October 2012 (Minutes No. 50), and 'The NIS Library Operation Regulations', approved by the NIS Management Board decision on 26 December 2012 г (Minutes No. 62).

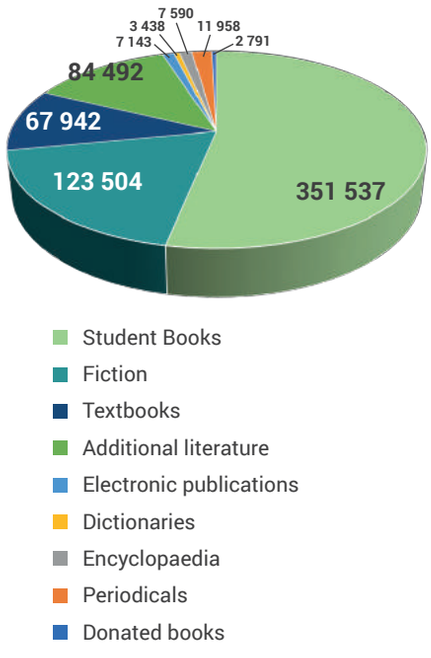
NIS schools' library collections are put together in support of the NIS Programme, taking into account teachers' and students' needs and the analysis of national and foreign publishing market.

In 2017, the total library stock amounted to **660,395** copies of educational, methodical literature, fiction, scientific and educational literature.

Promoting a Culture of Literacy among Students

One of the leading forms of library work in NIS schools is the formation of students' reading and functional literacy by means of the following intellectual games: A Trip to Success; Let's READ; Ambassadors of love of reading; Book Surprise; LibraryX; Magic Birthday; Reading Time; 1,2,3,4; Memoro; One Hundred Books; Book Start; READx; Writers Among Us; Young Poets; New Generation Writer; Five Minutes about your Favourite Book; Story Time interactive reading.

Figure. The total library stock of NIS schools



New methods are introduced by librarians: one hundred books per hour; book madness; literary jam; quotation of the day; reading man; side walk chalk fun; and, book tasting.

Our primary school students used the Carle technique to create applications that helped improve their reading literacy and develop their creativity.

Reading clubs operate in every NIS school. The clubs organised over the course of the year teleconferences between themselves.

The annual Bookcrossing campaign is held on the Day of the First President of the Republic of Kazakhstan in order to promote reading and to provide free access to the library stock of the NIS schools. As part of this year's campaign, students and teachers from 20 NIS schools shared 5568 books with other readers.

Work with Parents

Family reading clubs were established in order to strengthen the links between students, parents and the pedagogical community. Based on positive feedback from parents.

IS Kokshetau's Global Readers reading club established cooperation with the Wharton High School (Florida, United States).

As part of the International School Library Week in November 2017 online reading conferences were organised in cooperation with Oakridge International School (India) and Agrupamento de Escolas Dr. Júlio Martins (Shaviš, Portugal).

Family reading clubs are the creative platforms for informal communication between students and parents for discussing books, sharing opinions and reader recommendations.

Integrated Classes

Integrated lessons on the following topics were arranged in order to develop students' interest in reading through the use of information technology:

- in Mathematics: Vectors; The Similarity of Triangles; Polyhedrons;
- in Physics: The Transmission of Electrical Energy; Generators; Transformers;
- in Russian Language and Literature: 'I am talking to you in verse';
- in Biology: The Red Book of Kazakhstan; Teeth;
- in Computer Science: Databases;
- in Geography: In the Footsteps of Great Travellers; Working with the Periodicals, *Weather Phenomena*; The Hydrosphere and its Compositions;
- in English: The Alphabet; Kazakh Tales; Aldar Kose and his Magic Fur Coat; Reading a Fairy Tale; Creating a Mini Book based on the Fairy Tale, *Alice in Wonderland* by Lewis Carroll;
- in History of Kazakhstan: Requirements for publishing the results of sociological research', and so on.

During the academic year, training for students and teachers on the use of the EBSCO information database, and Twig-bilim and Bilimland electronic resources was organised in all the libraries.

The Work of the NIS Libraries

With a view to implementing contemporary library working practices and in order to promote reading and motivate inactive readers, our librarians completed the following professional development courses:

- 'Practical improvement of reading literacy skills is the basis for the formation of intellectual and creative development of students';
- 'Improving the literacy and reading culture of students through the development of spatial STEM-learning';
- 'Expanding the capacity of the library – ensuring media education and research opportunities at school'.

Also, our librarians took part in the following conferences:

- World Library and Information Congress: 83rd IFLA General Conference and Assembly on 'Library. Solidarity. Society' in Wroclaw, Poland;
- 46th Annual International Conference of the International Association of School Librarianship on the theme 'Learning Without Borders' in Long Beach, California, USA.

The library team delivered information about our latest work in developing information, functional and reading literacy among students by means of a presentation, 'Latest practice in the NIS school libraries'; a practical entitled, 'Reading books with the help of keywords: The keyword hexagon'; and, a poster, entitled 'Teach, motivate, inspire'.

NIS librarians attended the Frankfurt Book Fair in October 2017 to learn about the latest trends in electronic resources. At the fair, they discussed the possibility of cooperation with publishers such as MM publications, Harper Collins Children`s Book-Dorling Kindersley Limited, Faber & Faber, Little, Brown Book Group UK, Penguin Books Limited, Scholastic UK, Usborne Publishing Limited, Simon & Schuster UK, Langenscheidt, Hachette Book Group USA, and others.

Librarians shared the knowledge they acquired during seminars and professional development courses with colleagues by providing training sessions, cooperating closely with methodological departments, and by through teacher-librarian liaison. To ensure the exchange of best practices between the teaching staff of the NIS schools

The following training seminars and events were conducted for teacher support units, teachers, and curators:

- the use of EBSCO international database, TwigBilim, Bilimland databases;
- Book Bingo;
- Keyword Hexagon;
- Dark Poetry;
- Letter Mixer;
- Tangram;
- Using LearningApps and Kahoot;
- Using Time Line and Cart Line in different subjects and for different topics;
- Using Plickers in Lessons;
- Developing Information Literacy; and,
- The Three-Column Method for Working with Periodicals.

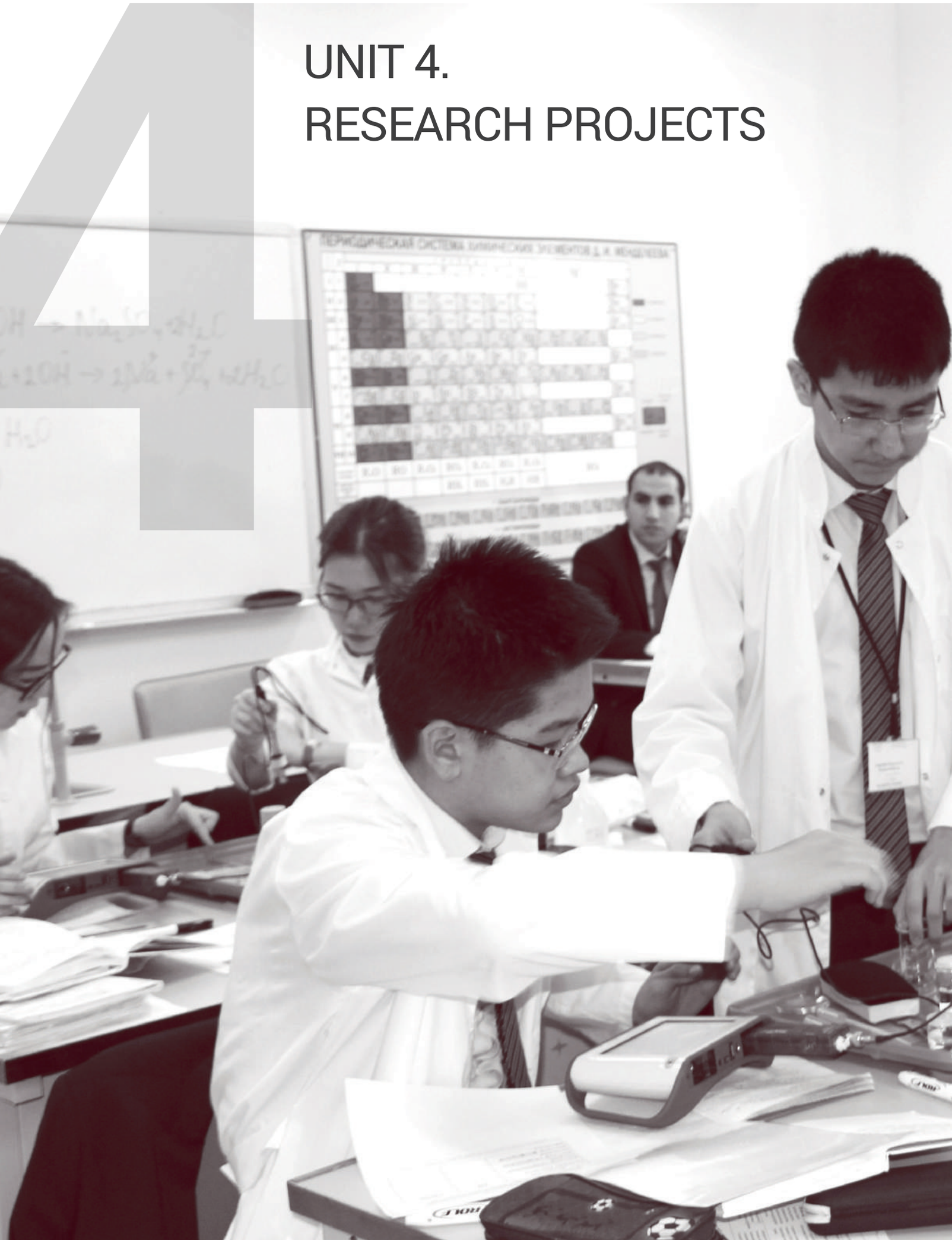
Developing Students' Information Literacy and Research Skills

NIS Libraries conducted the following classes on using analytical questionnaires, working with electronic resources, analysing the reliability of resources, summarising newspaper articles in order to improve students' information literacy and develop their research skills:

- Argumented analysis of materials;
- Visual literacy;
- Development of information literacy with the help of newspapers;
- Dark poetry;
- Graphical organizer;
- Bloom's Camomile;
- Six Thinking Hats;
- Brainstorming;
- World Café;
- Battle of Wits;
- Mind Map;
- The importance of reading;
- Using Tangram to develop spatial thinking;
- Reading with the method of three columns;
- A deep analysis of poems, 'Poetry for All';
- Keyword Hexagon;
- Journey through the Book Ocean;
- Academic Writing practical training session;
- Five ways to promote reading: Who? Where? What? When? Why? How?' (5W + 1H questions);
- Study using Big6;
- ADDIE;
- Guided Inquiry; and,
- Super3 research models.

These methods help to reveal the full potential of students, to provide them with different types of information, to raise their level of information literacy, and to develop the skills necessary for research work.

UNIT 4.
RESEARCH PROJECTS




NIS

AEO continued its work on Research Development during the reporting period NIS has continued to enhance its research capacity, following 'The Scientific Research Concept' approved by the NIS Management Board decision dated 14 December 2015 года (minutes #62).

The work on strengthening research capability is based on the following four key areas:

- research projects and curriculum evaluation (including cooperation with external researchers and external projects);
- capacity-building (for instance, teacher training in methodology);
- teacher research (Action Research and Lesson Study);
- experience dissemination (research digest, international conferences, etc.);
- participation in the OECD project 'The Future of Education and Skills: Education 2030'.

RESEARCH PROJECTS

Research conducted in NIS are divided into three categories.

Category 1 - research conducted by AEO.

At the end of 2017, there are 11 completed research projects, 6 more are under implementation and 2 research projects are at the planning stage (*see Appendix*).

The research findings are provided at the VII CIS August Conference (on 18-19 August 2017) and IX NIS International Conference (on 26-27 October 2017).

Category 2 - research conducted by AEO employees within master's and doctoral programmes.

A total of 17 requests for research in this category were accepted, and 16 of them were approved and conducted.

Category 3 - research conducted by external organisations. There are 8 requests being received from different organisations, and 4 of them are accepted. The most part of researchers are students from the national higher educational institutions.

The NIS research is coordinated by the Scientific Consulting Council (SCC).

The SCC meets twice a year to provide consultation on capacity-building in research, coordinate ongoing and new projects, and discuss their further development.

The SCC contributed to NIS building working connections with Pasi Sahlberg, a professor at the Arizona State University.

CAPACITY BUILDING

Workshop for scientific research coordinators was organised during NIS August International Conference and is meant to be a useful tool to coordinate intraschool research projects.

There are **20 NIS teachers** who took three-month online-courses on academic research writing in the HAMK Häme University of Applied Sciences to develop the research capacity. At the end of the training courses they prepared the articles to be published in Kazakhstani and international professional and academic periodicals.

The first step of the course 'Research Methods in Education' ended in May 2017. The training was conducted by AEO employees in three languages every three week (via Skype) involving invited speakers. NIS teachers who took a part and are interested in research practice attended 14 online-workshops in Kazakh, Russian and English. Providing teachers with access to this course through edX platform at any time is under planning stage.

Follow the link for a detailed information about the course *http://research.nis.edu.kz/.*

EMPIRICAL TEACHER RESEARCH TO IMPROVE PRACTICE

'Action Research' and 'Lesson Study' are in common practice of NIS teachers. The number of teachers taking participation in the projects is grown by 50% in 2017; 1,400 teachers take participation in empirical research. In the near future schools will publish a 'Teacher Research' journal based on the research results in three languages.

EXPERIENCE DISSEMINATION

There are six AEO employees who attended European **Educational Research Association conference** held in Copenhagen (Denmark) in 2017 with presentations on formative assessment, teach teaching, CLIL and graduates' perspectives about NIS.

IX International Conference 'Values, wellbeing and innovation for future education' was held in October



2017. More than 1,400 participants attended the conference within two days.

The following Kazakhstani and well known international speakers made their presentations at main sessions:

- Plenary session 1: Kulyash Shamshidinova (AEO), Pasi Sahlberg (Arizona State University) and Oon SengTan (National Institute of Education, Singapore);
- Plenary session 2: Gordon Neufeld (Neufeld Institute), Sayasat Nurbek (Astana International Financial Centre) and Liz Winter (University of Cambridge);
- Plenary session 3: Yuri Belfali (OECD), Tim Oates (Cambridge Assessment) and Carolyn Adams (International Baccalaureate);
- Plenary session 4: Phil Lambert (University of Sydney), Harry Patrinos (World Bank), Assylbek Kozhakhmetov (Almaty Management University).

The conference consisted of keynote reports, presentations of well-known speakers, round-tables, panel discussions, workshops, poster sessions and exhibition of educational resources.

A **symposium** was held and dedicated to **Makpal Dzhadrina, Doctor of Education, Professor**, one of the key authors of NIS-Programme.

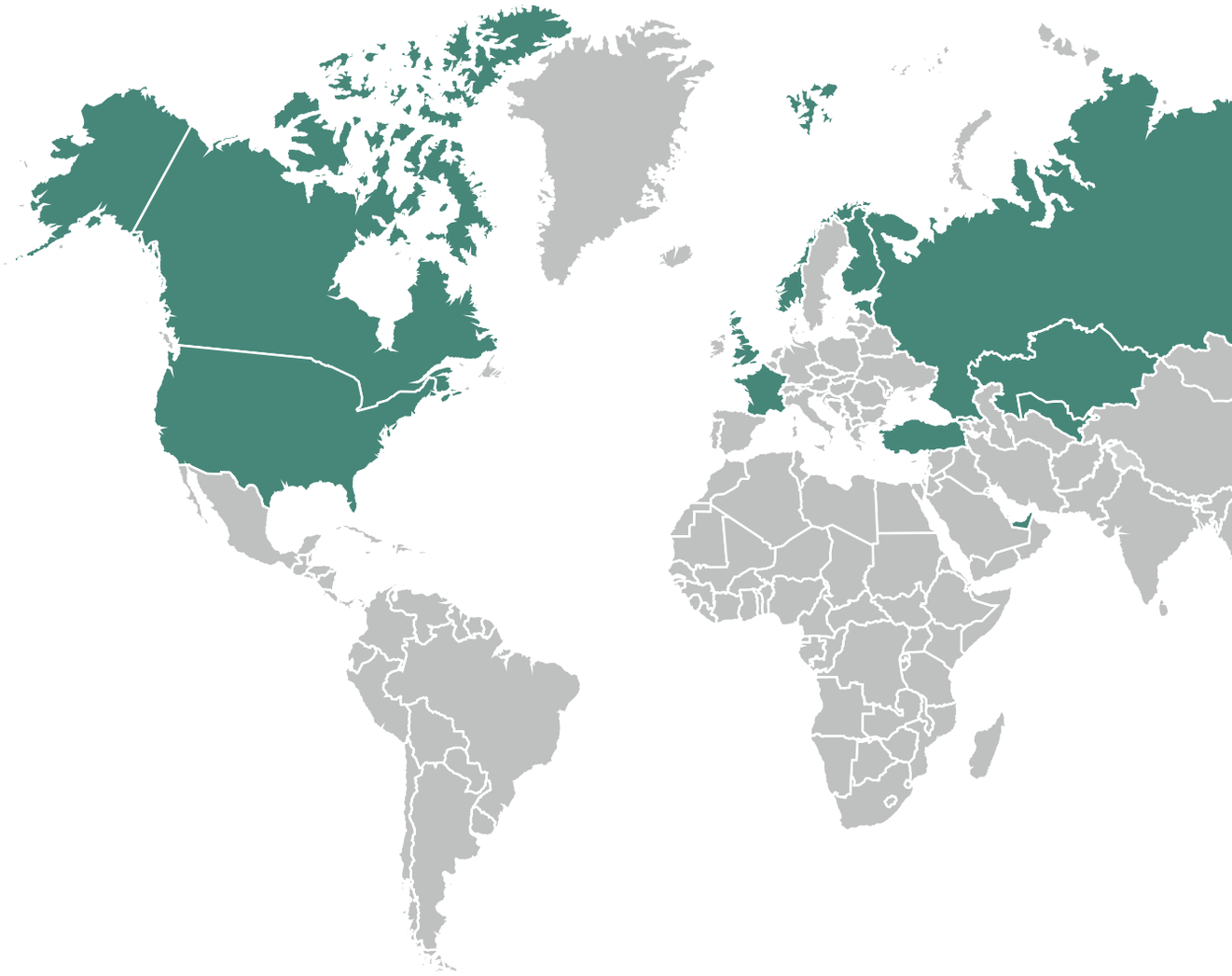
The conference also consisted of two discussion forums on assessment, symposium on school health, Workshop on Mainstreaming Competencies (UNESCO), presentation of the book '*Higher Education Reform and Development*: *The Case of Kazakhstan*' involving such authors as Colleen McLaughlin, Alan Rubi and Matthew Hartley.

Geographical boundaries of the International Conference are expanded from year to year through a better awareness of the Conference among teachers, workers of regional educational organisations and members of international organisations. AEO constantly works on raising awareness of the Conference among Kazakhstani and international experts. There are representatives of 25 countries who participated in the conference.

KERA International Conference 'Trends in the Eurasian educational policy and practice' was held by Nazarbayev University with the assistance of NIS in February 2017.

See information on research and conferences held by NIS at *http:///research.nis.edu.kz* and *http://conferences.nis.edu.kz.*

> *NIS publishes research digests on a quarterly basis which include information about the latest research in education.*



OECD PROJECT FUTURE OF EDUCATION AND SKILLS: EDUCATION 2030

In 2017, NIS continued its participation in the OECD project

'The Future of Education and Skills: Educations 2030' as the national coordinator for Kazakhstan. NIS employees took part in developing the OECD 2030 Conceptual Framework, which determines the knowledge, skills and values that future generations will need.

A comparative analysis of the subject programmes for Physical Education required input from us. Using this input, the OECD Secretariat wrote a preliminary report on the results of the survey. A project comparing Mathematics subject programmes is at the data collection stage.

NIS representatives and groups from more than 30 countries participated in two informal meetings in Lisbon (Portugal) and Paris (France). In general, the meetings of the OECD project addressed the following questions:

- Curriculum overload;
- The introduction of values into curriculum;
- Student agency;
- Knowledge, skills, attitudes and values of 2030;
- Integration of education, science and innovations; and,
- The future of Mathematics curricula.

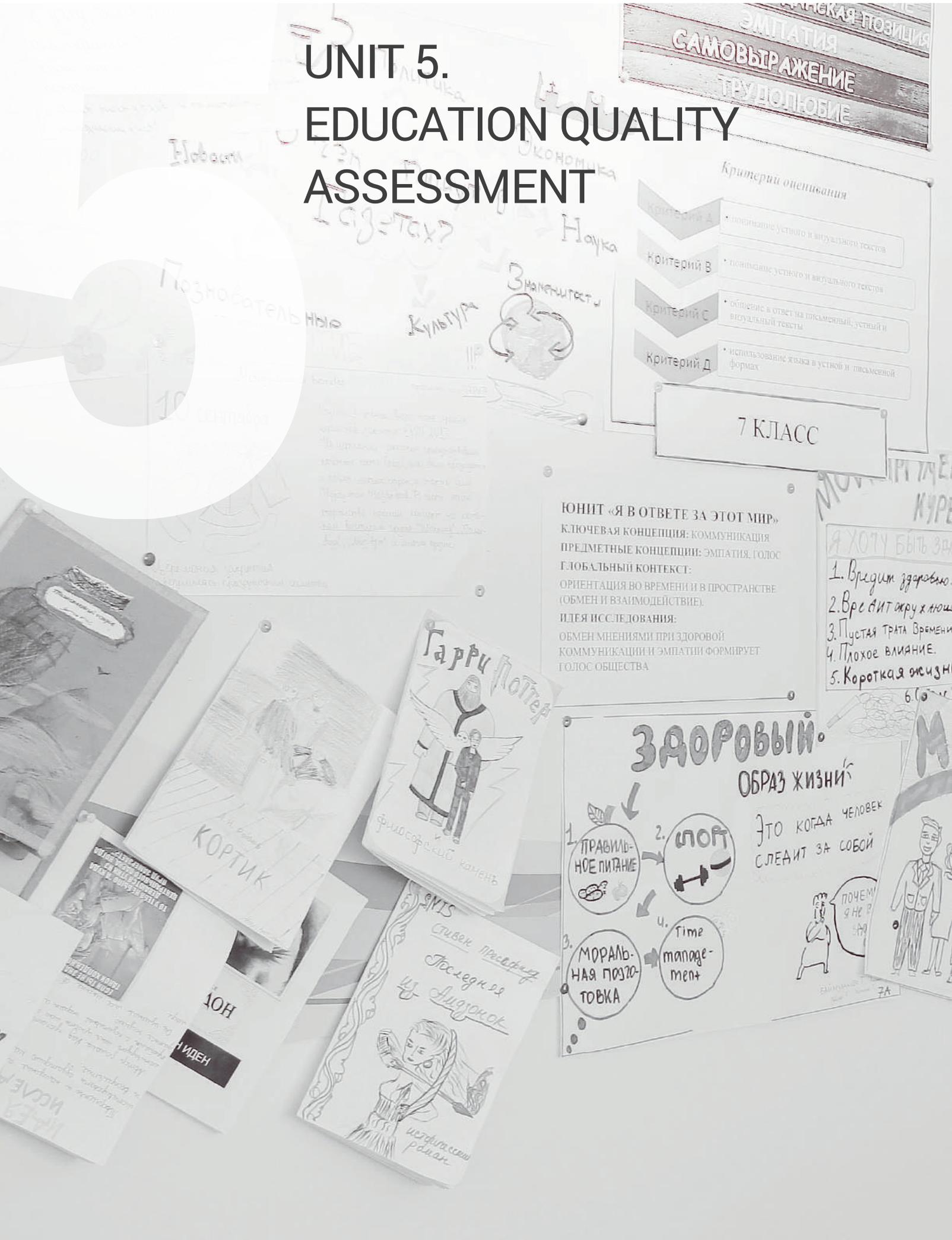
During the meetings, NIS representatives actively discussed the challenges connected with developing and renewing subject programmes, including curriculum lag, and global competence development.

Particularly special was the participation of A. Muratbaev, D. Saparov, D. Abdishev and K. Dauletbek from NIS Astana PhM. The students participated actively in the discussion on curriculum renewal, and were given the opportunity to open a session on the future of the mathematics curriculum, in 2017, in Paris.

The follow-up brochure containing key information, a draft of OECD Conceptual Framework for Education 2030, and an article by OECD experts, 'Future Shocks and Shifts: Challenges for the Global Workforce and Skills Development' has been prepared in two languages. *(http://smk.edu.kz/Bank/Show/109486; http://smk.edu.kz/Bank/Show/109487).*

The OECD Project, 'The Future Of Education And Skills: Education 2030' provides NIS the opportunity to learn about critical issues in education, and discuss curriculum issues globally in collaboration with world leaders in education. The project offers a variety of opportunities for learning about curriculum reform and improvement.

UNIT 5. EDUCATION QUALITY ASSESSMENT



Assessment at Nazarbayev Intellectual Schools is governed by the regulations, instructions, models, and assessment policy approved by the NIS Board of Trustees and NIS Management Board *(see the Appendix)*.

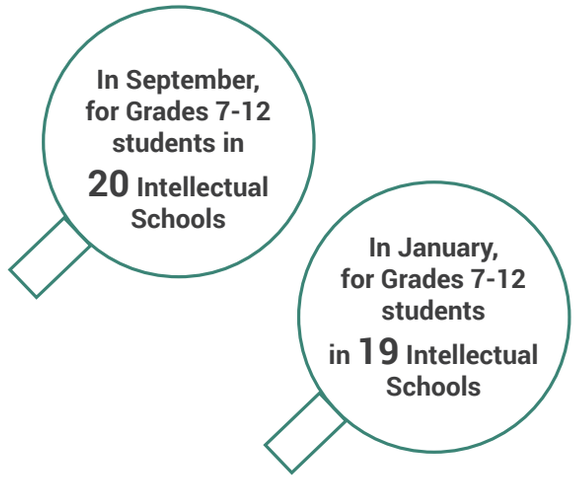
5.1. STUDENT ACHIEVEMENT MONITORING

The student achievement monitoring system was optimized in 2017 by providing reports to students via the unified information educational environment (UIEE) and switching to TAO[4] software for computer testing.

STUDENT ACHIEVEMENT MONITORING IN MATHEMATICS

4 workshops were conducted with the support of Cito international experts in Mathematics and **with the participation of Mathematics teachers from Intellectual Schools** to set assessment standards, develop achievement level descriptors and to discuss the results of item review. **350 test items** were developed in 2017 to update the item bank.

There were two monitoring moments carried out in 2016-2017 academic year:



There was one monitoring moment carried out in 2017-2018 academic year:

A total of **12,226 students** took part in the monitoring moment carried out in January 2017.

As a result of the monitoring administration, a total of **95,860** reports delivered to Intellectual Schools including:

- **47,379** individual detailed reports on the status of all fulfilled tasks;
- **1,102** detailed reports on grade and parallel level;
- **47,379** student progress reports with indication and description of student achievement levels.

The comparative analysis of **Grade 7** students' results in September 2016 and January 2017 showed the increase in the number of students at 'good' and 'high' achievement levels across previously studied curriculum units: the number of students at 'high' level in Numbers has increased by 1.4%; the number of students at 'good' level in Algebra – by 14.3%; the number of students at 'good' and 'high' levels in Geometry – by 6.9% and 3.2%, respectively; the number of students at 'good' level in Statistics and Theory of Probability – by 19%; the number of students at 'high' level in Mathematical Modelling and Analysis – by 3.7%.

The analysis of **Grade 8** students' results in September 2016 and January 2017 showed the increase in the number of students at 'good' and 'high' achievement levels across previously studied curriculum units: the number of students at 'high' level in Algebra increased by 2.6%; the number of students at 'good' level in Geometry – by 8.3%; the number of students at 'high' level in Mathematical Modelling and Analysis – by 2.4%.

The comparative analysis of **Grade 9** students' results in September 2016 and January 2017 showed the increase in the number of students at 'good' and 'high' achievement levels in Algebra by 2.7% and 9.4%, respectively.

The comparative analysis of **Grade 10** students' results in September 2016 and January 2017 showed the increase in the number of students at 'good' and 'high' achievement levels across previously studied curriculum units: the number of students at 'good' and 'high' levels in Algebra has increased by 13.4% and 2.2%, respectively; the number of students at 'good' level in Geometry – by 6.3%; the number of students at 'good' and 'high' levels in Mathematical Modelling and Analysis – by 22.8% and 4.7%, respectively.

The analysis of **Grade 11** students' results in September 2016 and January 2017 showed the increase in the number of students at 'good' and 'high' achievement levels across previously studied curriculum units: the number of students at 'high' level in Algebra increased by 2.2%; the number of students at a 'good' level in Geometry – by 9.2%.

The comparative analysis of **Grade 12** students' results in September 2016 and January 2017 has shown the increase in the number of students at 'good' and 'high' achievement levels across previously studied curriculum units: the number of students at 'good' level in Algebra has increased by 20.6%; the number of students at a 'good' level in Geometry – by 36.1% with no students at a 'beginner' level; the number of students at a 'good' level in Statistics and Theory of Probability – by

[4] TAO – система компьютерного тестирования, разработанная Международным исследовательским центром в сфере оценивания образовательных достижений для автоматизации процедуры тестирования учащихся.

21.7%; the number of students at a 'good' level in Mathematical Modelling and Analysis – by 5%.

Overall, the comparative analysis of two monitoring moments carried out in September 2016 and January 2017 showed an upward dynamic across four student achievement levels ('beginner', 'basic', 'good', 'high') across five curriculum units in Mathematics ('Numbers', 'Algebra', 'Geometry', 'Statistics and the Theory of probability', 'Mathematical Modelling and Analysis'). This trend witnesses the students' progress in grasping educational material by reducing a number of students who need additional pedagogical support.

A total of **14,076 students** took part in the monitoring moment carried out in September 2017.

As a result, a total of **112,866** reports were prepared and delivered to Intellectual Schools including:

- **55,725** individual detailed reports on the status of all fulfilled tasks;
- **1,416** detailed reports on grade and parallel level;
- **55,725** student progress reports with indication and description of student achievement levels.

The results of the student achievement monitoring carried out in September 2017 show that Intellectual schools' students have mastered a relatively high level of actual knowledge and skills in Mathematics which testifies an effective learning of the curriculum content.

The analysis of **Grade 7** students' results showed a vast majority of students mastered 'good' and 'high' achievement levels across previously studied curriculum units: Numbers – 56.2% with 'good' level and 19.7% with 'high' level, Algebra – 28.8% with 'good' level and 51.1% with 'high' level, Geometry – 27.2% with 'good' level and 23.7% with 'high' level, Statistics and Theory of Probability – 16.5% with 'good' level and 75.4% with 'high' level, Mathematical Modelling and Analysis – 30.3% with 'good' level and 43.2% with 'high' level.

The student achievement monitoring administration among **Grade 9** students demonstrated high results in Statistics and Theory of Probability ('basic' level – 38.5%, 'good' level – 20.1%, 'high' level – 3.3%).

The analysis of **Grade 10** students' results showed the best students' achievements in the following units: Geometry (a number of students at 'basic' level – 46.3%, 'good' level – 5.7%, 'high' level – 1.2%), Mathematical Modelling and Analysis (a number of students at 'basic' level – 39.9%, at 'good' level – 21.7%, at 'high' level – 8%).

The student achievement monitoring administration in **Grades 11** demonstrated high results in the following units: Numbers ('basic' level – 25.9%, 'good' level – 15.3%, 'high' level – 12%), Algebra ('basic' level – 30.8%, 'good' level – 21.8%, 'high' level – 4.6%), Statistics and Theory of Probability ('basic' level – 39.1%, 'good' level – 16.4%, 'high' level – 3%), Mathematical Modelling and Analysis ('basic' level – 44.2%, 'good' level – 16.1%, 'high' level – 7.3%).

It is worth mentioning that Grade 12 students' monitoring results showed no students at a 'beginner' level in Algebra, and an effective learning of educational material in Statistics and Theory of Probability by the majority of students (number of students at a 'basic' level – 30.8%, at a 'good' level – 40%, at a 'high' level – 6%).

STUDENT ACHIEVEMENT MONITORING IN LANGUAGES

Two workshops supported by Cito experts on language subjects were held with the participation of teachers from Intellectual Schools to set assessment standards, develop the description of levels of learning achievements and discuss the results of item review. In 2017, there are **500 items** developed to update the item bank.

In 2017, two monitoring moments were carried out on 'The integrated Kazakh language and literature' (hereinafter – Kazakh as a second language), 'The integrated Russian language and literature' (hereinafter – Russian as a second language), 'English':

April, 2016-2017 study year among Grade 7-9 students of 19 Intellectual Schools;

September, 2017-2018 study year among Grade 7 students of 20 Intellectual Schools.

As a result of the monitoring, a total of **121 092** reports were delivered to Intellectual Schools including:

- **59,273** individual detailed reports on the status of all fulfilled tasks;
- **59,273** reports on students' progress with the description of levels of learning achievements;
- **2546** detailed reports on grade and parallel level.

A total of **7620 students** took part in the monitoring of learning achievements in **languages among Grade 7, 8 and 9 students** in April 2017.

GRADE 7

According to NIS-Program upon completing Grade 7 the expected level of Kazakh as a second language/Russian as a second language is **'Good'/ 'High' B1**, and English is **'Good'/ 'High' A2**.

The monitoring of students' learning achievements in Kazakh as a second language shows that majority of students has reached **'Good' B1** and **higher** level across four skills ('Listening' - 57.2%, 'Reading' - 37.3%, 'Speaking' - 67.5%, 'Writing' - 68%).

It should be noted that the monitoring of students' learning achievements in Russian as a second language shows that the vast majority of students has reached **'Good' B1** and **higher level** ('Listening' - 86.3%, 'Reading' - 64.8%, 'Speaking' - 82.7%, 'Writing' - 78.3%).

The monitoring of students' learning achievements in **English** shows that a large number of students has reached **'Good' A2 and higher level** ('Listening' - 40.9%, 'Reading' - 48.2%, 'Speaking' - 55.5%, 'Writing' - 69.3%).

Thus, the results of the monitoring show that students have sufficient level of language skills and are able to continue their study in the second language of instruction according to trilingual policy of Nazarbayev Intellectual schools.

GRADE 8

According to NIS-Program upon completing Grade 8 the expected level of Kazakh as a second language/Russian as a second language is **'Good'/ 'High' B2**, and English is **'Good'/ 'High' B1**.

The monitoring of students' learning achievements in **Kazakh as a second language** shows that the vast majority of students has reached the required level across four skills ('Listening' - 92.9%, 'Reading' - 52.6%, 'Speaking' - 77.4%, 'Writing' - 63.3%). Furthermore, there is a part of students who reached **'High' B2 level** that is higher than expected ('Listening' - 2.7%, 'Reading' - 3.2%, 'Speaking' - 23.8%, 'Writing' - 13.6%).

The monitoring of students' learning achievements in **Russian as a second language** shows that majority of students has reached **'Good' B2** level across four types of skills ('Listening' - 76.2%, 'Reading' - 75.6%, 'Speaking' - 91.3%, 'Writing' - 87%). It should be noted that there are Grade 8 students who have **'Good' B2 level** of language skills that is higher than expected ('Listening' - 10.4%, 'Reading' - 11.6%, 'Speaking' - 42.6%, 'Writing' - 34%).

According to the results of monitoring of students' learning achievements in **'English'** across four skills, students demonstrated knowledge and skills at level of **'Good' B1** and higher: 'Listening' - 36%, 'Reading' - 47.1%, 'Speaking' - 35%, 'Writing' - 36.4%. Furthermore, a part of the students reached the level of **'High' B1**, which is higher than the expected level ('Listening' - 1.7%, 'Reading' - 6%, 'Speaking' - 2.9%, 'Writing' - 6.5%).

Thus, the results of the monitoring show that learning languages through communicative approach and CLIL (Content and Language Integrated Learning) has a positive impact on learning the second language.

GRADE 9

According to NIS-Program upon completing Grade 9 the expected level of Kazakh as a second language/Russian as a second language is **'Good'/ 'High' B2**, and English is **'Good'/ 'High' B1**.

The monitoring of students' learning achievements in **Kazakh as a second language** shows that majority of students has reached 'Good'/ 'High' **B2** level across four skills ('Listening' - 50.8%, 'Reading' - 39.5%, 'Speaking' - 72.6%, 'Writing' – 47.6%).

It should be noted that the monitoring of students' learning achievements in **Russian as a second language** shows that the vast majority of students has reached **'Good'/ 'High' B2 level** ('Listening' - 71.6%, 'Reading' – 69.4%, 'Speaking' - 84.3%, 'Writing' - 41.4%).

The results of monitoring of students' learning achievements in **English** show that a large number of students has reached **'Good'/ 'High' B1** level ('Listening' - 39.8%, 'Reading' - 41.8%, 'Speaking' - 52.8%, 'Writing' - 52.7%).

Thus, Grade 9 students have sufficiently high language skills, particularly in English, which is required for learning sciences in high school.

In September 2017-2018 study year, monitoring of students' learning achievements in languages was conducted among students of Grade 7. A total of 1 810 students took part in the monitoring.

As a result of the monitoring, a total of **28 562** reports were delivered to Intellectual Schools including:

- **14,161** individual detailed reports on the status of all fulfilled tasks;
- **14,161** reports on students' progress with the description of the levels of learning achievements;
- **240** detailed reports on the grade and parallel level.

According to NIS-Program upon completing Grade 6 the expected level of Kazakh as a second language/Russian as a second language is **'Good' B1**, and English is **'Good' A2**.

The results of monitoring of students' learning achievements in **Kazakh as a second language** show that most of students have reached **'Base'/ 'Good' B1** level across four skills: 'Listening' - 79.9%, 'Reading' - 83.2%, 'Speaking' - 60.1%, 'Writing' - 75.3%. However the students at 'Beginner' B1 level of Kazakh as a second language have poorly developed skills of 'Speaking' (15.5%) and 'Writing' (17.4%) compared to necessary 'Good' B1 level.

The monitoring of students' learning achievements in **Russian as a second language** shows that the vast majority of students has reached **'Good' B1** and **higher level** ('Listening' - 92.7%, 'Reading' - 79.2%, 'Speaking' - 77.4%, 'Writing' - 69.8%).

It should be noted that the monitoring of students' learning achievements in **English** shows that the vast majority of students has reached **'Good'**

A2 level ('Listening' - 89.8%, 'Reading' - 68.4%, 'Speaking' - 52.7%, 'Writing' - 48.2%).

In total, the monitoring shows an upward dynamics. However newly selected Grade 7 students have poorly developed skills of 'Speaking' and 'Writing' in English due to grammatical and translation approach used in comprehensive schools.

The monitoring system of students' learning achievements in languages was presented at the International Conference of International Association of Educational Assessment (IAEA) on the topic 'Monitoring Languages in a Trilingual Setting' (Batumi, Georgia, 2017).

5.2. CRITERIA-BASED ASSESSMENT SYSTEM

The improved criteria-based assessment system operates in grades 1-5 and 7-9 of Intellectual Schools according to the schedule of phased transition.

The following activities have been undertaken in 2017 for successful and integrated application of the assessment system:

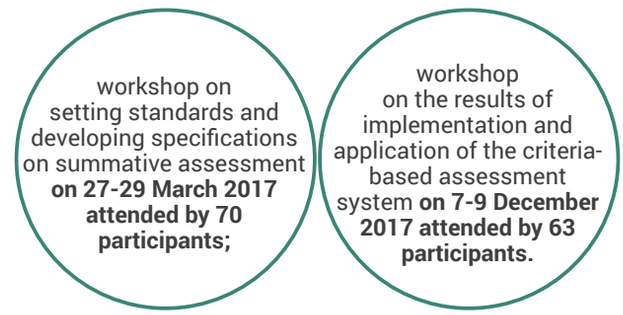
- development of methodological recommendations and specifications for summative assessment in order to provide methodological support to teachers;
- development of "Assessment" Information system (http://se.nis.edu.kz);
- training workshops for **133** teachers;
- online review of summative works on the Summative Assessment Base together with teachers;
- methodological and consultancy support to teachers for effective interaction and well-timed awareness.

A total of **43** methodological recommendations on summative assessment for **grades 8, 9** and **83** specifications on summative assessment for **grades 5, 8, 9, 11** have been developed during the reporting year for Intellectual Schools.

Materials on the assessment are placed on "Assessment" Information system that creates favourable environment for experience exchange between teachers, improves their professional skills in development of assessment tools, enables a review of materials on formative and summative assessment.

Resource library of "Assessment" Information system includes **1,624** sample tasks for formative assessment, **2,071** sample tasks for summative assessment for unit and **189** specifications including **2,010** sample tasks for summative assessment for term. In addition, NIS teachers and CPM employees carry out online review and procedures of standardisation of summative works for term across schools, grades, subjects and languages of instruction on the Information system platform. This ensures the quality of summative works through the Method of Expert Evaluation.

The following activities on criteria-based assessment have been undertaken for the reporting year in order to develop professional competencies of NIS teachers:



Development and piloting of the special programme "100 Ideas for the Development of a Culture of Formative Assessment" has been started for a focused and systematic approach to the development of formative assessment culture in Intellectual Schools.

Highlights and advantages of the criteria-based assessment practice and results of its implementation in Intellectual Schools are presented at regional August meetings, international conferences, in particular:

- International Association for Educational Assessment (IAEA) on the theme "Ensuring Validity, Fairness and Equal Opportunities in Summative Assessment in Nazarbayev Intellectual Schools" (Georgia, Batumi);
- The Association for Educational Assessment – Europe on the theme "Experience of Objective and Fair Assessment in Nazarbayev Intellectual Schools Through Summative Assessment" (Czech Republic, Prague);
- IX NIS International Research and Practice Conference on the theme "Values, Wellbeing and Innovation for Future Education" under the workshop "100 Ideas for the Development of a Culture of Formative Assessment" where NIS teachers presented workshops on the

development of leadership, improvement of teaching practice and assessment in class, mainstreaming the assessment of students' non-cognitive skills.

5.3 GRADE 10 AND 12 EXTERNAL SUMMATIVE ASSESSMENT

Academic achievements of NIS students are assessed according to international standards ***IGCSE*** upon completion of secondary school (Grade 10), and ***AS-level*** or ***A-level*** upon completion of high school (Grade 12).

Examinations are conducted in various forms (open-ended and close-ended questions which require short and extended answers, essay, practical and course works) and contain multiple papers.

The following work has been carried out for successful organisation and conduct of external summative assessment in Grade 10:

- test specifications were developed on 11 subjects such as: "Mathematics", "History of Kazakhstan", "Kazakh language as a first language", "Integrated Kazakh language and literature", "Russian language as a first language", "Integrated Russian language and literature", "English", "Physics", "Biology", "Chemistry" and "Computer science";
- examination materials were developed by CAIE in cooperation with CPM;
- examination materials were delivered to all schools;
- inspection of 19 Intellectual Schools was conducted according to the Instructions on arranging and conducting external summative assessment of academic achievements of Nazarbayev Intellectual Schools` students;
- workshops, webinars were held for Intellectual Schools` deputy directors on the issues of conduct and preparation to SA during the year;
- **30,440** examination papers of Grade 10 students were marked by 253 NIS teachers and 11 CPM specialists according to regulatory documents;
- statistical processing of the results was carried out;
- four types of reports (13,509 individual reports, 209 grade-level reports, 11 subject reports, 1 analytical report) were prepared based on the results of SA;
- 17 collections of samples of students' responses on summative assessment across subjects were prepared and sent to schools.

Confidentiality and safety requirements were observed at all stages of conducting and arranging external summative assessment examinations.

Each students took examination on 5 compulsory subjects and 1 optional subject out of 4.

GRADE 10

COMPULSORY SUBJECTS	LANGUAGE OF EXAMINATION	
Mathematics	Kazakh	Russian
English	English	
History of Kazakhstan	Kazakh	
Kazakh/Russian language (as a first language)	Kazakh/Russian	
Kazakh/Russian language and literature (as a second language)	Kazakh/Russian	
OPTIONAL SUBJECTS		
Chemistry	Kazakh	Russian
Physics	Kazakh	Russian
Biology	Kazakh	Russian
Computer science	Russian	

In total **2,256** students participated in SA.

Results of the 2017 examinations on "Mathematics", "Kazakh language as a first language", "Russian language as a second language", "English", "Physics", "Chemistry" and "Computer science" showed positive dynamic in quantitative and qualitative data.

The **Mathematics** examination consisted of two components. The tasks tested the ability of students to operate with mathematical techniques and apply mathematical knowledge and skills.

Students demonstrated their skills of using algebraic fractions, solving quadratic, linear and fractional equations and inequalities, using formulas of abridged multiplication when reducing fractions, formulas of simplification of mathematical expressions with n-th roots and using formulas of arithmetical and geometrical progressions. Considerable progress is shown on themes "Logarithms. Exponential function and logarithmic function", "Solving triangle", 'Ratio between angles and sides in a right-angled triangle' compared to the previous year.

The share of students who were awarded with grades A*, A, B and C **was 61%**, and 18.4% of them were awarded with grades A* and A. The share of students who were awarded with grades A*, A, B and C has increased by 17.8% compared to 2016.

The **History of Kazakhstan** examination consisted of two components. The tasks assessed both knowledge and comprehension of historical facts and events, the ability to analyse them, and to present ideas and summarising conclusions.

Students have demonstrated their abilities of working with historical sources, critical analysis of historical events, presenting concrete arguments and facts, as well as justifying their conclusions.

The share of students who were awarded with grades **A*, A, B** and **C** made up **78.5%,** and **6.7%** of them were awarded with grades A* and A. In comparison with 2016 there were no considerable changes.

The **Kazakh/Russian language (as a first language)** and **Integrated Kazakh/Russian language (as a second language) and literature** examinations consisted of two components. The tasks assessed communicative, language and intercultural competencies and knowledge of modern society.

In **Kazakh/Russian language (as a first language)** students demonstrated good understanding of main features of forms and genres, target audience, goal, content, style and language of the texts given for analysis. They also showed the connection between style and genre, information source and target audience.

The share of students who were awarded with grades A*, A, B, and C in Kazakh language was 95.5%, whereas in Russian language was 65.8%. 23.8% and 5.2% were awarded with grades A* and A respectively. The indicator in Kazakh language increased by 31.2%, and there were no significant changes in Russian language.

In **Integrated Kazakh/Russian language (as a second language) and literature** students demonstrated a good understanding of text content which are taken from different sources, ability to respond to questions, analyse, assess and select information and present it in a certain style. Students consistently presented their arguments and ideas, and expressed their impressions, observations, and commented ideas and own viewpoints. The questions on making conclusions have proven to be difficult for students.

The share of students who were awarded with grades A*, A, B, and C in Integrated Kazakh language and literature was 76%, whereas in Integrated Russian language and literature was 97.9%, 14.7% and 10% of which were awarded with grades A* and A respectively. The indicator in Integrated Kazakh language and literature has not changed and the indicator in Integrated Russian language and literature increased by 0.6%.

The English examination consisted of three components. The tasks assessed communicative, linguistic and intercultural competencies and knowledge of modern society.

Students demonstrated competence in the following skills: reading, writing, and listening. Most of them could demonstrate comprehension of content of heard and read texts, as well as an ability to find main and additional information and present their thoughts logically and consistently.

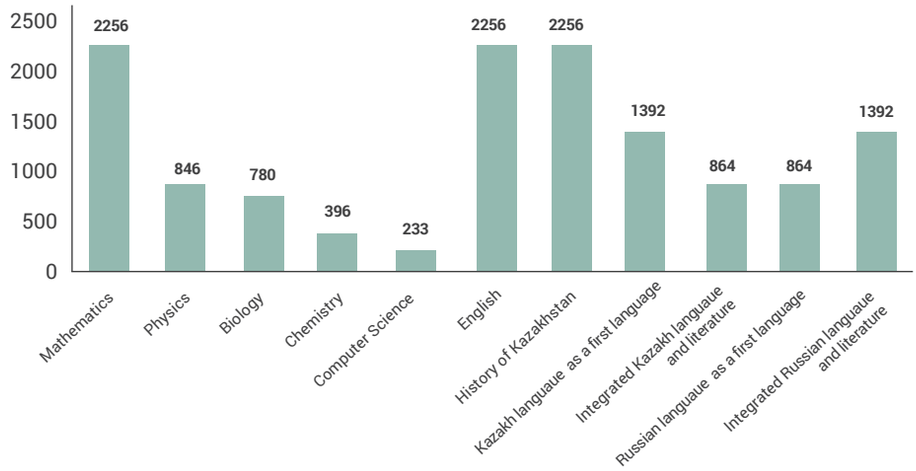
Students improved their reading skills compared to 2016 however their listening and writing results slightly decreased.

The share of students who were awarded with grades A*, A, B and C made up 79.9%, and 6.5% of them were awarded with grades A* and A. The indicator has increased by 6.3% in 2017 compared to 2016.

The **Physics, Chemistry, and Biology** examinations consisted of two components. The tasks tested students' knowledge and understanding of processes and laws, processing, applying and assessing information, as well as practical and experimental skills.

Students demonstrated abilities of applying knowledge in solving problems, making hypotheses, finding information from different sources, presenting arguments to justify answers, converting numerical data, describing facts, defining laws and theories, making conclusions, conducting experiments and presenting data in various forms (tables, graphs, diagrams).

Diagram. Number of Grade 10 students who took participation in SA in 2016-2017 academic year across subjects



The share of students who were awarded with grades A*, A, B, and C was 68.5% in Physics, 81.9% in Chemistry, 80.1% in Biology, and 25.3%, 24% and 10.3% were awarded grades A* and A respectively. The indicators on Physics and Chemistry were increased by 14.7% and 2.7% respectively compared to 2016, however there were no changes in Biology.

The **Computer science** examinations consisted of two components. The tasks assessed the students' ability to understand main subject terms and concepts, applying algorithms, programming, planning, modelling and management of projects.

The results showed that students have an understanding of the main principles of the subject, can both gather and analyse information, design applications and write a code, think critically and analyse the reliability of decisions.

A

The share of students who were awarded with grades **A*, A, B** and **C** was **58.4%**, and **7.3%** of them were awarded with grades A* and A. There was an increase in indicators by **23.5%** compared to 2016.

The external assessment system was presented at International Association for Educational Assessment (IAEA) on the theme 'External Summative Assessment Results as an Indicator of Effective Teaching and Learning' (Georgia, Batumi);

More than 100 NIS teachers were trained on "Backward design" method at the August conference for NIS educators in order to use the results of external summative assessment when planning lessons.

5.4. INTERNATIONAL ACCREDITATION OF THE INTELLECTUAL SCHOOLS

80 international experts **visited 13 NIS schools** during the preliminary and team visits as part of Council of International Schools international accreditation in 2017.

20 NIS schools now have membership in the international organization of Council of International Schools; **10 NIS schools are Candidates for Accreditation** and are currently undergoing self-assessment.

As a result of visits to the NIS Schools, **the experts noted** substantial progress in school development on seven accreditation standards, on the development and integration of the concepts of global citizenship and intercultural relations ensured through multilingual and multicultural environment.

CIS

10 Intellectual Schools hold the CIS accredited status

8 NIS schools in Semey, Ust-Kamenogorsk, Kokshetau, Atyrau, Kyzylorda, Aktobe, Shymkent PHM and Shymkent CHB **have received the CIS international accreditation** during the reporting year.

CIS holds training for independent experts in order to build the capacity of NIS employees. In 2017, five NIS employees were invited to attend training in Moscow, and six more NIS employees took online courses. NIS experts participated in a range of team visits in the accreditation of foreign schools (Russia, Turkey).

UNIT 6. STUDENTS' EDUCATIONAL ACHIEVEMENTS


ЖАС ЗИЯТКЕР

6.1. ACADEMIC PROGRESS AND QUALITY ASSURANCE

By the end of 2016-2017 academic year **13,794** students were studying at 20 Intellectual Schools. 8531 students studied in the Kazakh language and 5263 in the Russian language.

According to the analysis of results across levels of education, students' academic performance in 2016-2017 academic year amounted to 100%.

As of results of 2016-2017 academic year, **the quality of knowledge of NIS students amounted to 93%**. Data for four terms of the academic year shows a positive trend in the growing indicator of the quality of knowledge acquired by students.

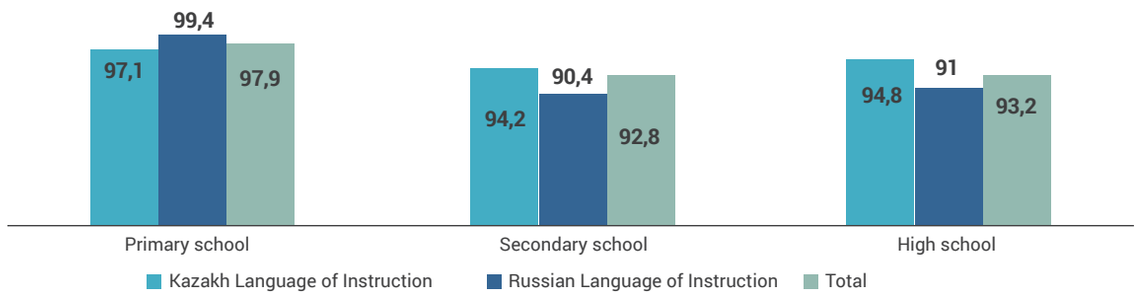
Quality of knowledge in classes taught in Kazakh is 94.4% **that is 3.6% higher** than the results of students taught in Russian (90.8%).

According to quality of knowledge analysis across levels of education, **primary school**[4] students got the highest results - **97.9%** compared to secondary and high school students - 92.8% and 93.2% respectively.

The number of candidates for high school certificate with honours in Grade 12 in 2016-2017 academic year was 13 students from Astana, Almaty CHB, Petropavlovsk CHB, Aktau CHB, and 11 of them (85%) obtained Honour Certificates.

The number of candidates for "Altyn Belgi" award in Grade 12 was 50 students from the same schools, and 45 of them (90%) have been attested.

Diagram. Quality of knowledge of NIS students in 2016-2017 academic year across levels of education and language of instruction, %



6.2. STUDENTS RESULTS IN INTERNATIONAL AND NATIONAL OLYMPIADS, COMPETITIONS AND CONFERENCES

'The Robotics Olympiad Regulations', approved by the NIS Management Board decision dated 16 September 2015 (minutes #48), and 'The NIS Subject Olympiad Regulations', approved by the NIS Management Board decision dated 14 December 2015 (minutes #62) makes provisions for NIS students to participate in international and national olympiads, contests, and conferences.

In 2017, a total of **3662 students** participated in national and international olympiads and competitions, and **2248** (61.4%) of them were prizewinners (compared to 1949 (52.8%) of students in 2016).

Among them, **441 students came in first place; 880, in second place; and, 927 in third place.**

Students demonstrated their competitiveness by succeeding in the most reputable international subject olympiads and scientific project competitions, such as:

- The International Mendeleyev Olympiad (Astana, Kazakhstan)
- The International Chemistry Olympiad (ICHO) (Nakhon Pathom, Thailand);
- The Zhautykov International Mathematics, Physics, Computer Science Olympiad (Almaty, Kazakhstan)
- The Silk Way International Mathematics Olympiad (Almaty, Kazakhstan);
- The International Asia-Pacific Mathematical Olympiad (Almaty, Kazakhstan);
- Asian Physics Olympiad (APhO) (Yakutsk, Russia)
- The Balkans Mathematical Olympiad (Varna, Bulgaria)
- The International Physics Olympiad (IPhO) (Yogyakarta, Indonesia);
- The International Linguistics Olympiad (ILO), (Dublin, Ireland)
- The International Geography Olympiad (IGEO) (Belgrade, Serbia)
- The Tuymaada International Mathematics, Physics, Chemistry, Computer Science School Olympiad (Yakutsk, Russia);
- The Zholdasbekov International Mathematical and Mechanical Research Competition (Almaty, Kazakhstan)
- Exploring the Science World International Space Research Competition (Baikonur, Kazakhstan)
- The Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth (Korolyov, Russia);
- The INFOMATRIX- ASIA International Computer Science Projects (Almaty, Kazakhstan)
- The Mathematics and Design International Scientific Context (Moscow, Russia)
- The European Mathematicial Congress (Berlin, Germany)
- The 13th International Juniors Physics Olympiad (IJSO) (Bali, Indonesia)

[5] *Analysis of primary school is based on the results of students in two schools: Schools of Physics and Mathematics in Kokshetau and Taldykorgan.*

Table. Number of prize-winners of the national and international olympiads and science projects competitions

Olympiads		Scientific competitions		Contests		Remote internet olympiads		Total		
National	International	National	International	National	International	National	International	National	International	Total
160	**51**	**112**	**66**	**808**	**133**	**694**	**224**	**1774**	**474**	**2 248**

- The International Chemistry Tournament (Moscow, Russia)

Annually, NIS students participate in more than 20 national and international intellectual olympiads and science projects competitions.

There is an upward trend in the following schools: NIS Almaty PhM, NIS Taldykorgan, NIS Uralsk, NIS Pavlodar and NIS Ust-Kamenogorsk.

STUDENT RESEARCH WORK

Kazakhstani and foreign academics provide advice to students who demonstrate extraordinary ability during the selection process and a high level of performance during their study in the **Academic Student project**. (This involves 1071 students; 148 scholars, including 14 overseas scholars).

Among them:

Subject area	Number of scholars	Number of students
Mathematics	20	132
Chemistry	31	210
Biology, Biotechnology, Medical Science, Zoology, Genetics, Anatomy	48	362
Physics, Nanotechnology, Astronomy, Technology	35	310
Computer Science, Programming, Robotics	3	14
Ecology, Geography	4	18
Education research	3	10
Total:	**144**	**1 056**

As a results of research conducted by students, teachers and academics, research projects were presented at exhibitions and competitions, and articles published in peer-reviewed scientific journals.

A total of **2229 new projects** were initiated during the reporting period; **1119** of which were presented and **58 of which were included** in the national and international competitions. For the list of 58 projects complete with detailed information on them, see the relevant Appendix.

6.2. STUDENTS' RESULTS IN INTERNATIONAL AND NATIONAL OLYMPIADS, SCIENTIFIC COMPETITIONS AND CONFERENCES

During the reporting period, students of NIS schools took part in national and international technical competitions, contests and olympiads:

- Students from NIS Almaty PhM won a **special invitation from Skolkovo at the Eurasian stage of Skolkovo Startup Tour** (7-8 February 2017, Almaty, Kazakhstan);
- Students from NIS Almaty PhM took **came in first** and **second places at the IX RoboFest Russian Robotics Festival** (16 March 2017, Moscow, Russia);

- Students of NIS Almaty ChB came in **second place at the NTSI-SkART International Science, Technology and Systems Engineering Contest, Skolkovo,** (22 March 2017, Moscow, Russia);

- Students from NIS Taldykorgan came in **First Place at the Exploring the Science World International Space Research Competition** (4-8 April 2017, Baikonur, Kazakhstan);

- Students of NIS Almaty PhM came in **second place at the INFOMATRIX International Competition** (13-16 April, Almaty, Kazakhstan);
- Students of NIS Almaty PhM came in **worldwide 38th place at VEX ROBOTICS 2017** out of 80

teams in their age category. (19-22 April 2017, Louiseville, US)

- Students from across NIS were awarded **seventeen prize places at the National Competition on Robotics based on Astana EXPO-2017** (2-4 July 2017, Astana, Kazakhstan);

- **The Kazakhstan National Team came in eighth place** among 163 participating countries at the **First Global Challenge** International Robotics Competition (16-18 July 2017, Washington, United States);

- Diyara Beissenbekova and Aruzhan Koshkarova, students from NIS Almaty PhM won the **Grand Prize at the Technovation Challenge Computer Programming Competition** (San Francisco, United States) as a part of the Flash team;

- Students from NIS Almaty PhM came in **first place in the Fintech Startup category at Tech Garden Almaty** (Almaty, Kazakhstan);

- Students from NIS Ust-Kamenogorsk came in **first place at the First Steps to the Greatest Invention"** (6 November 2017, Karagandy, Kazakhstan);

- **A team including participants from NIS Taldykorgan and Almaty came in fourth place** out of 31 participating countries in the senior category at WRO-2017 International Robotics Olympiad (10-12 November 2017, San Jose, Costa Rica);

- **A team from NIS Uralsk came in 13th place** out of 86 participating countries in the regular category at WRO-2017 International Robotics Olympiad (10-12 November, 2017, Costa Rica);

- **Teams from NIS Kostanay and NIS Uralsk were placed among the top 16 teams** among 48 countries in the robot football category at WRO-2017 International Robotics Olympiad (12 November 2017, San Jose, Costa Rica);

- NIS Almaty PhM students won **first place** in the **National Innovation Project Olympiad** (15 November 2017, Almaty, Kazakhstan);

- NIS Almaty PhM students won **first place** in the **National Innovation Competition** (28 November 2017, Astana, Kazakhstan).

NIS STUDENTS AND TEACHERS INTELLECTUAL PROPERTY ASSETS (PATENTS)

In 2017, NIS students registered two intellectual property objects and five objects were provided for state copyright registration:

Patents registered:

1. Zhantemirov S., 12 Grade student of NIS Kokshetau - Copyright, **Software for NIS Table hardware**, Intellectual Property N007115, Certificate of state registration of right over copyright object dated January 12, 2017, N105;
2. Baglanova A., 11 Grade student, Tuleuov N., graduate of NIS Aktobe in 2016 - copyright on "Software to calculate the volume of fuel rail car", intellectual property N0385, Certificate of state registration of right over copyright object dated November 27, 2017, N2855

The following objects to be registered:

1. Karipbay A., Kamaldinova A., Kireyeva A., Grades 9-11 students, Ginayat T. G. Biology teacher in NIS Pavlodar, Doctor of Biological Science, Professor of Pavlodar State Pedagogical University, copyright on **"Creating a refreshing drink based on tea fungus"** ;
2. Makashev A., Grade 12 student, Abdrakhmanova T.M., Chemistry teacher in NIS Pavlodar, copyright **"Oil purification using modified clay"**;
3. Baranov A., Grade 11 student, Abdrakhmanova T. M., Chemistry teacher in NIS Pavlodar, copyright on "**Useful units for getting pheromone of Cholorado beetle**;"
4. Bauer R., Grade 9 student, Abdrakhmanov T. M., Chemistry teacher in NIS Pavlodar, copyright on "**Assess the product quality with the help of urease**"
5. Maden K., Ilyas A., 10 Grade students in NIS Shymkent, copyright on **"A device for slip lining and swabbing the internal surface of oil-refining, sewage and industrial pipes of different pollution**".

6.3. STUDENTS' RESULTS IN INTERNATIONAL EXAMINATIONS

IELTS International Examinations

One of the compulsory exams for NIS graduates is the IELTS international exam. Every year this exam is taken by Grade 12 students to identify the quality and level of their English language. The results of IELTS exams are recognized by leading universities around the world.

In the 2016-2017 academic year, 405 (100%) graduates from NIS Astana, NIS Almaty ChB, NIS Aktau, NIS Petropavlosk took the IELTS exam. Graduates from NIS Almaty ChB, NIS Aktau and NIS Petropavlovsk took this exam for the first time.

The average IELTS score is 5.9. Eighteen percent of graduates achieved a very strong IELTS score of 7 and above.

Table. IELTS results of NIS graduates.

№	NIS School	No. of Students	Average Score
1	NIS Astana	91	6,9
Average score (working more than four years):			**6,9**
2	NIS Almaty ChB	87	5,8
3	NIS Aktau ChB	149	5,3
4	NIS Petropavlovsk ChB	78	5,4
Average score (for the first time):			5,5
OVERALL grade point score:		**405**	**5,9**

There is an upward trend in the improvement of performance in NIS Astana graduates (IB).

SAT International Examination

Graduates of NIS schools have the option to sit the Scholastic Assessment Test (SAT) to facilitate admission to overseas universities.

In 2017, 80 students **sat SAT 1** (Mathematics, Reading and Writing). The average score from the four schools was **1202** out of a maximum of 1600.

SAT 2 (Mathematics, Chemistry, Physics and Biology) was taken by 28 students from NIS Astana, NIS Almaty ChB and NIS Aktau. The highest scores were received by the following students:

- Nurpeis Baimukan (800 points in Mathematics and 800 points in Physics (NIS Astana); and,
- Yassuyi Kainolda (800 points on Mathematics and 740 in Physics (NIS Almaty ChB).

Diagram. Average score of NIS Astana (IB) graduates for academic years

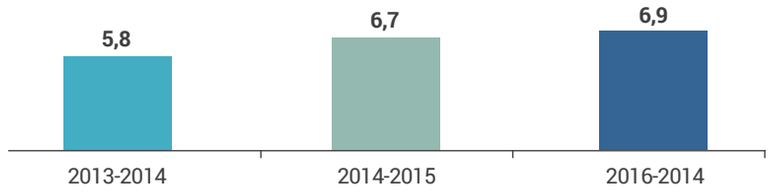


Table. Students enrolment by funding status (2016 and 2017)

Year	Total Graduates, no.	People number								Proportion, %	
		Nazarbayev University, no.		Other Kazakhstan institutions, no.		Foreign institutions, no.		Total			
		Full scholarships	Fee-based Programmes	Full scholarships	Fee-based Programmes	Full scholarships	Fee-based Programmes	Full scholarships	Fee-based Programmes	Full scholarships	Fee-based Programmes
2016	2071	399	2	1237	209	182	42	1818	253	87,8	12,2
2017	405	99	-	180	44	61	20	340	64	84,2	15,8

6.4. UNIVERSITY ADMISSIONS

Of our graduating students, 99.8%[5] were admitted to universities: 323 graduates, to national higher educational institutions; and 81, to foreign institutions. Three hundred and forty students were awarded full scholarships.

The most popular higher educational institutions in Kazakhstan among NIS graduates are the following: Nazarbayev University (99), Asfendiyarov Kazakh National Medical University (34), Al-Farabi Kazakh National University (29), Gumilyov Eurasian National University (24), and the Kazakh-British Technical University (15).

The most popular foreign universities are Hong Kong Polytechnic University (15), Zhejiang University (5), Pusan National University (2), and the Moscow State Institute of International Relations (2).

6.5. RECOGNITION OF NAZARBAYEV INTELLECTUAL SHOOLS GRADUATES LEARNING OUTCOMES

Recognition of Nazarbayev Intellectual Schools Graduates learning outcomes by national universities.

During the graduation ceremony at Nazarbayev University in 2017 and at the meeting of the Supreme Board of Trustees of "Nazarbayev University", "Nazarbayev Intellectual Schools" and "Nazarbayev Foundation" Autonomous Educational Organizations, the President gave a range of instructions on the recognition of NIS qualifications by national institutions and on the provision of accelerated Bachelors degree programmes.

In order to meet that mandate, meetings with **14 Kazakhstani higher educational establishment,** which NIS graduates apply for, were organized.

Work on comparing the content of the curricula of NIS upper secondary education subjects and general educational disciplines of higher educational institutions was conducted.

Based on the results of the work done**, an agreement has been reached with a number of national universities** on the recognition of upper secondary school subjects as credits in university general educational disciplines. **The decision of the Kazakh-British Technical University to accept all graduates of the Intellectual schools for direct entry into second year is a significant event.**

The recognition of the learning outcomes of Nazarbayev Intellectual Schools Graduates by foreign universities.

A range of meetings were held and agreements on cooperation with foreign universities were concluded to aid the recognition of the learning outcomes of NIS students by foreign universities.

Serious efforts were made at **the Hong Kong Polytechnic University** on the monitoring of learning outcomes of NIS graduates during their study.

The delegation of **the Hong Kong Polytechnic University** visited NIS twice in June and in November 2017.

Similar work is in progress with Yamanashi Gakuin University in Japan, City University of Hong Kong, Chinese University of Hong Kong and University of Hong Kong, North American University and Winona State University on the recognition of the subjects taught in upper-secondary school, NIS Programme certificates and a possibility to award grants to our graduates.

[6] One student did not take an exam on IB certificate and did not apply to university for health reason.

LIST OF NIS BRANCHES

1.	Centre of Excellence Private Entity	37a, 31 street, Astana; tel: 8 (7172) 23-57-50 site: www.cpm.kz
2.	Educational Resource Centre Private Entity	37a, 31 street, Astana; tel: 8 (7172) 23-57-73 site: erc-nis.kz
3.	NIS SERVICE Private Entity	37a, 31 street, Astana; tel: 8 (7172) 23-58-24
4.	Centre for Educational Programmes	37a, 31 street, Astana; tel: 8 (7172) 42 10 11 site: www.cep.nis.edu.kz
5.	Centre of Pedagogical Measurements	37a, 31 street, Astana; tel: 8 (7172) 23-57-66 site: cpi-nis.kz
6.	NIS Almaty PhM	145, Zhamakayev street, Almaty 8 (727)3 31-01-04 Site: fmalm.nis.edu.kz
7.	NIS Almaty ChB	2, Yelibayev street, Almaty tel: 8 (727)3 31-01-10 Site: hbalm.nis.edu.kz
8.	NIS Astana PhM	37a, 31 street, Astana; 8 (7172) 55-98-01 Site: ast.nis.edu.kz
9.	NIS Astana	35, 31 street, Astana; 8 (7172) 55-80-33 Site: nisa.edu.kz
10.	NIS Aktau ChB	District 33, Aktau Tel: 8 (7292) 70-10-66 Site: akt.nis.edu.kz
11.	NIS Aktobe PhM	District Batys 2, Aktobe Tel: 8 (7132) 70-47-80 Site: akb.nis.edu.kz
12.	NIS Atyrau ChB	22, 11 street, Nursaya district, Atyrau Tel: 8 (7122) 55-85-51 Site: atr.nis.edu.kz
13.	NIS Karaganda ChB	62, Shakhterov avenue, Karaganda Tel: 8 (7212) 55-88-80 Site: krg.nis.edu.kz
14.	NIS Kokshetau PhM	59, Mirzoyan street, Kokshetau Tel: 8 (7162) 25-31-40 Site: kt.nis.edu.kz
15.	NIS Kostanay PhM	239, Gagarin street, Kostanay tel: 8 (7142) 999-747 Site: kst.nis.edu.kz
16.	NIS Kyzylorda ChB	8, Sultan Beybarys street, Kyzylorda Tel: 8 (7242) 55-11-51 Site: kzl.nis.edu.kz
17.	NIS Pavlodar ChB	16/2, Tkachev street, Usolsky district, Pavlodar Tel: 8 (7182) 733-000 Site: pvl.nis.edu.kz
18.	NIS Petropavlosk ChB	22a, Ibrayev street, Bereke district,Petropavlovsk Tel: 8 (7152) 55-97-22 Site: ptr.nis.edu.kz

19.	NIS Taldykorgan PhM	47, Karatal street, Taldykorgan Tel: 8 (7282) 21-98-62 Site: tk.nis.edu.kz
20.	NIS Taraz PhM	266, Domalak Ana street, Aray 2, Taraz 8 (7262) 99-98-55 Site: trz.nis.edu.kz
21.	NIS Semey PhM	32, Kabylbayev street, Semey Tel: 8 (7222) 53-24-33 Site: sm.nis.edu.kz
22.	NIS Uralsk PhM	16, Moskovskaya street, Uralsk Tel: 8 (7112) 22-27-04 Site: ura.nis.edu.kz
23.	NIS Ust-Kamenogorsk ChB	Ust- Kamenogorsk 53 Kanysh Satpayev avenue tel: 8 (7232) 56-01-25 Site: ukk.nis.edu.kz
24.	NIS Shymkent PhM	6, Elitny Gorodok, Akzhayik district, Shymkent Tel: 8 (7252) 29-30-06 Site: fmsh.nis.edu.kz
25.	NIS Shymkent ChB	1-A, Nursat district, Shymkent Tel: 8 (7252) 42-51-70, 8 (7252) 42-50-96 Site: hbsh.nis.edu.kz
26.	International School Astana	32/1, Turkestan, Astana 8 (7172) 91-61-77 site: isa.nis.edu.kz
27	Republican Physics and Mathematics School non-profit joint-stock company	2/1, Turkistan street, Astana Tel: 8 (717)2 79-72-74 36, Bukhar Zhyrau boulevard, Almaty Tel: +7 (727)3 95-01-83; 3 95-01-85; 3 95-01-77 site: www.fizmat.kz, www.izho.kz

APPENDICES

Table. Number of Intellectual school students broken down by grades as of December 29, 2017 (within the framework of the State order and 'Orken' educational grant)

NIS schools	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11	Grade 12	TOTAL	including boarding schools
NIS Astana PhM							145	141	168	142	198	163	957	99
NIS Astana							174	140	187	159	124	104	888	98
NIS Aktau ChB							78	149	129	177	57		590	120
NIS Aktobe PhM							78	171	137	92	74	178	730	119
NIS Almaty PhM							120	143	144	95	243	222	967	43
NIS Almaty ChB							98	166	152	344	117		877	204
NIS Atyrau ChB							71	171	149	72	69	172	704	131
NIS Karaganda ChB							80	153	152	83	79	191	738	120
NIS Kokshetau PhM	66	59	57	53	55		80	131	89	75	96	88	849	91
NIS Kostanay PhM							76	101	165	142	103	94	681	132
NIS Kyzylorda ChB							78	122	110	111	158	131	710	132
NIS Pavlodar ChB							77	118	130	128	119	135	707	128
NIS Petropavlosk ChB							80	149	163	127	85		604	141
NIS Semey PhM							80	164	134	72	111	138	699	120
NIS Taldykorgan PhM	60	57	53	54	35	33	83	115	86	80	77	74	807	106
NIS Taraz PhM							78	110	136	131	89	158	702	132
NIS Uralsk PhM							79	133	127	71	70	85	565	124
NIS Ust-Kamenogorsk ChB							79	145	132	129	77	79	641	104
NIS Shymkent PhM							84	157	117	130	89	153	730	120
NIS Shymkent ChB							97	169	109	86	134	96	691	131
Total	**126**	**116**	**110**	**107**	**90**	**33**	**1815**	**2848**	**2716**	**2446**	**2169**	**2261**	**14837**	**2394**

Table. The list of AEO 1st category research projects

No.	1st category research projects	Period	Status
	Impact of learning in the Intellectual school on the further study and career of students according to the opinion of 2010 graduates	2015	Phase 1 completed, Phase 2 in progress
	Study of the implementation process of teaching in three languages in Nazarbayev Intellectual schools	2016	Phase 1 completed, Phase 2 in progress
	Implementation of the Integrated Criteria-Based Assessment Model of AEO Nazarbayev Intellectual Schools	2016	Phase 1 completed, Phase 2 in progress
	Advantages and barriers to the implementation of the projects 'Action Research' and 'Lesson Study' in Intellectual schools	2016-2017	Completed
	Evaluation procedures in terms of attestation of pedagogical staff of Nazarbayev Intellectual schools and equated persons	2016	Completed
	Introduction of a new model of teacher attestation in Intellectual schools	2017	In progress
	Workload of students of Nazarbayev Intellectual schools	2017	Completed
	Monitoring implementation of the Integrated Educational Programme	2015	In progress
	Satisfaction of employees with their work in Intellectual schools (1st stage)	2015, 2018	Phase 1 completed, Phase 2 starts in 2018
	Report of the Centre for Pedagogical Excellence on the level courses of professional development and leadership courses for school directors (Cambridge University, Nazarbayev Intellectual schools)	2016	Completed
	Introduction of updated content of education and assessment in primary schools (Grade 1) of Kazakhstan (Nazarbayev University, Cambridge University, Nazarbayev Intellectual schools)	2016	Completed
	Diagnostic testing of students in pilot schools	2016	Completed
	Review of the primary school educational programme of Kazakhstan (Netherlands Institute for Curriculum Development, Nazarbayev Intellectual Schools)	2016	Completed
	A validation study of effectiveness and anticipated validity of the system of competitive selection of students (CiTO, Nazarbayev Intellectual schools)	2016	Completed
	Validity of assessing the students' reading literacy in Intellectual schools in the context of trilingual education (CiTO, Nazarbayev Intellectual schools)	2016	Completed
	Studying the state of health of students in Nazarbayev Intellectual schools (Nazarbayev University)	2016	Completed
	A study of children's well-being in Kazakhstan (Nazarbayev University, Cambridge University)	2015-2017	Completed
	Comparative analysis of TIMSS 2015 results in mathematics and science (Nazarbayev University, Dortmund Technical University, Nazarbayev Intellectual Schools)	2017-2018	Planned
	Evaluation of the Integrated Educational Programme	2018	Planned

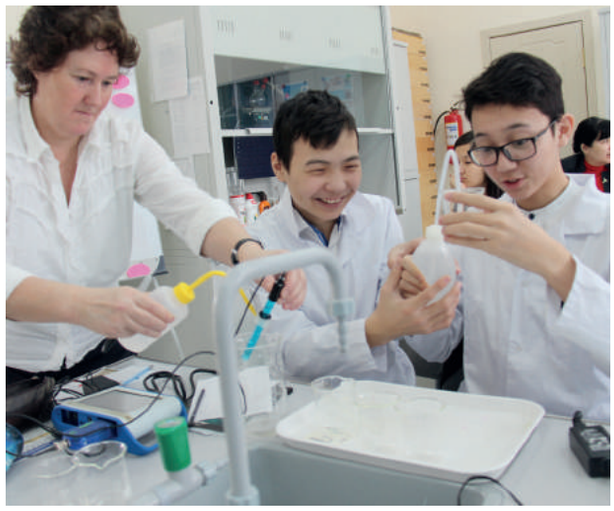


Таблица. Перечень научно-исследовательских работ учащихся (победители международных конкурсов проектов и научных соревнований за 2017 год)

№	Theme of the project, achievements, author, supervisor
1	**Lower bounds for the energy functional for a family of Hamiltonian-Minimal Lagrangian Tori in CP^2** Gold medal, The S.-T. Yau Science Awards, project-based competition in mathematical sciences, Tsinghua University, Beijing, China, December 11-13, 2017. **Author: Aknazar Kazhymurat**, Grade 11, NIS Almaty PhM **Supervisor: Mironov A.E.,** Corresponding Member of the Russian Academy of Sciences, Leading Researcher of the Laboratory of Dynamical Systems, Sobolev Institute of Mathematics, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Associate Professor of Laboratory of Geometrical Methods of Mathematical Physics after N.N. Bogolyubov, Moscow State University, Russian Federation
2	**Algorithms for constructing Al-Farabi regular polygons with the help of a mathematical compass and a ruler** Gold medal, VII International competition of research projects in mathematics and mechanics named after U. Dzholdasbekov, Al-Farabi Kazakh National University, Almaty, Kazakhstan, March 2-4, 2017. **Author: Sunkar Tursyngali,** Grade 12, NIS Almaty ChB **Supervisor: Ye.Myrsydykov,** Mathematics teacher, NIS Almaty ChB
3	**Computer environment for geometric constructions** Gold medal, VII International competition of research projects in mathematics and mechanics named after U. Dzholdasbekov, Al-Farabi Kazakh National University, Almaty, Kazakhstan, March 2-4, 2017. **Author: Sandugash Andamassova,** Grade 12, NIS Almaty ChB **Supervisor: B. Sebepbayeva,** Mathematics teacher, NIS Almaty ChB
4	**3D computer modeling to divide the sphere on the basis of methods suggested by Al Farabi** Gold medal, VII International competition of research projects in mathematics and mechanics named after U. Dzholdasbekov, Al-Farabi Kazakh National University, Almaty, Kazakhstan, March 2-4, 2017. **Author: Bekzat Tolekov,** Grade 12, NIS Almaty ChB **Supervisor: G. Kamzina**, Mathematics teacher, NIS Almaty ChB
5	**Solving the systems of linear equations in physical problems** Silver medal, VII International competition of research projects in mathematics and mechanics named after U. Dzholdasbekov, Al-Farabi Kazakh National University, Almaty, Kazakhstan, March 2-4, 2017. Gold medal, Republican competition of scientific projects, Pavlodar, Kazakhstan, 2017. **Author: Dauren Yermenov**, Grade 11, NIS Aktobe PhM **Supervisor: A.Medvedeyeva, Ye.Medvedeyeva**, Mathematics teachers-moderators, NIS Aktobe PhM

6	**The use of silver nanoparticles to increase the efficiency of the ready-to-assemble silicon cell** Gold medal, XIII International scientific competition in space research "Discovering the World of Science", Baikonur, 2017. Gold medal, Republican competition of scientific projects, Pavlodar, Kazakhstan, 2017. **Author: Indira Aitkulova**, Grade 10, NIS Karaganda ChB **Supervisor: D.Afanasyev**, Candidate of Physical and Mathematical Sciences, Senior Lecturer of the Department of Radiophysics and Nanotechnologies, Karaganda State University named after academician Ye.Buketov Consultant: M.Beysenbekova, Physics teacher, NIS Karaganda ChB
7	**Study of the alternative ways of firefighting with the use of low-frequency waves** Silver medal, XIII International scientific competition in space research "Discovering the World of Science", Baikonur, 2017. **Author: Abai Loran Almukhambetov**, Grade 11, NIS Atyrau ChB **Supervisor: S.Kabdulov**, Physics teacher, NIS Atyrau ChB
8	**3D modeling of planetary systems** Gold medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Aidyn Turlanov**, Grade 9, NIS Aktobe PhM **Supervisor: B. Zhandauletova**, Computer Science teacher, NIS Aktobe PhM
9	**Development of an application for conducting the in-school selection phase of Mathematics Olympiad** Gold medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Dias Urazov**, Grade 9, NIS Aktobe PhM **Supervisor: B. Zhandauletova**, Computer Science teacher, NIS Aktobe PhM
10	**Automated "SmartLife" intellectual model on the example of the "smart" yurt project based on alternative energy sources** Gold medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Raukhat Arkulov**, Grade 11, NIS Kostanay PhM **Supervisor: A. Shertser**, Computer Science teacher, Master of Pedagogy, NIS Kostanay PhM
11	**A mobile application for the IOS with the database of Kazakhstani universities** Gold medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Rahimzhan Aymaganbetov,** Grade 11, NIS Aktau ChB **Supervisor: A. Kaziyev,** Computer Science teacher, NIS Aktau ChB
12	**The first Kazakhstani Smart Lock "bLock" created on the basis of the microcontroller "ATmega328p"** Silver medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Ivan Krepak,** Grade 10, NIS Almaty PhM **Supervisor: A. Dyusembaev,** Doctor of Physical and Mathematical Sciences, Professor of the department of information systems, Al-Farabi Kazakh National University

13	**Mobile application "Zharys" (Zharysqa qatys!)** Silver medal, National Olympiad of innovative projects among schoolchildren in the context of the complex charity project "Azamat KZ" by public association 'Public National Movement "Kazakhstan-2050", Astana, November 12-16, 2017. 2nd place and a cash prize of 500 000 tenge, Republican youth competition of innovative projects "Nurintech", nomination 'Socially significant innovations', Astana, December 25, 2017. **Author: Ivan Krepak,** Grade 10, NIS Almaty PhM **Supervisor: A. Dyusembaev**, Doctor of Physical and Mathematical Sciences, Professor of the department of information systems, Al-Farabi Kazakh National University
14	**Computer game "Colored Cuisenaire Rods"** Bronze medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Dalila Ibragimova**, Grade 10, NIS Karaganda ChB **Supervisor: G.Davletgariyev,** Computer Science teacher, NIS Karaganda ChB
15	**Characteristic property of an exponential progression or a new numerical mean** Gold medal, XI International competition of scientific projects "Mathematics and Design", section 'Science of Mathematics', Moscow, Russian Federation, April 29 – May 3, 2017. **Author: Talgat Akhmetzhanov**, Grade 11, NIS Karaganda ChB **Supervisor: N. Gulmanov,** Mathematics teacher, NIS Karaganda ChB
16	**Laboratory modeling of gas condensation processes on the surface of space objects** Gold medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Space Laboratory', Korolev, Russian Federation, April 17-22, 2017. Silver medal, Republican competition of scientific projects, Pavlodar, Kazakhstan, 2017. **Author: Asset Seksenali**, Grade 11, NIS Almaty PhM **Supervisor: A.Drobyshev,** Doctor of Physical and Mathematical Sciences, Al-Farabi Kazakh National University
17	**Photobioreactor-oxygen generator for aquarium fish** Gold medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Our Home-Earth', Korolev, Russian Federation, April 17-22, 2017. Gold medal, Republican competition of scientific projects, Pavlodar, Kazakhstan, 2017. **Author: Saya Maratova**, Grade 10, NIS Ust-Kamenogorsk ChB **Supervisors: G. Sadykanova**, Candidate of Biological Sciences, Associate Professor, Sarsen Amanzholov East Kazakhstan State University, **K. Mukasheva,** Biology teacher, NIS Ust-Kamenogorsk ChB
18	**3D model of the flight of Kazakhstani satellite "KazSAT-3"** Gold medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Information Technologies', Korolev, Russian Federation, April 17-22, 2017 **Author: Zhanibek Mubinov**, Grade 9, NIS Atyrau ChB **Supervisor: O. Khassanov**, Physics teacher, NIS Atyrau ChB

19	**Development and study of energy-saving LED devices** Gold medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Human and Energy', Korolev, Russian Federation, April 17-22, 2017. Silver medal, Republican competition of scientific projects, Pavlodar, Kazakhstan, 2017. **Author: Dulat Aldazharov,** Grade 11, NIS Ust-Kamenogorsk ChB **Supervisors: D. Yerbolatuly**, Candidate of Physical and Mathematical Sciences, Head of the Laboratory of Collective Use, Sarsen Amanzholov East Kazakhstan State University, **G. Turakanova**, Physics teacher, NIS Ust-Kamenogorsk ChB
20	**Dynamic encryption to protect information** Gold medal, XI International competition of scientific projects "Mathematics and Design", section 'Mathematics in the field of information protection', Moscow, Russian Federation, April 29 – May 3, 2017 **Author: Anuar Daniyar**, Grade 8, NIS Kokshetau PhM **Supervisors: K.Mussabekov,** Candidate of Physical and Mathematical Sciences, associate professor, Sh.Ualikhanov Kokshetau State University, **S.Zykrina,** mathematics teacher, NIS Kokshetau PhM
21	**Magic square of ideal numbers** Gold medal, XI International competition of scientific projects "Mathematics and Design", section 'Mathematical models of real processes in nature and society', Moscow, Russian Federation, April 29 – May 3, 2017 **Author: Arslan Sagintayev**, Grade 10, NIS Astana
22	**Second-order curves and their properties related to tangents** Silver medal, XI International competition of scientific projects "Mathematics and Design", section 'Science of Mathematics', Moscow, Russian Federation, April 29 – May 3, 2017. **Author: Daniyar Nurmukhamet,** Grade 11, NIS Ust-Kamenogorsk ChB **Supervisors: Zh. Rakhmetullina,** Associate Professor, Candidate of Physical and Mathematical Sciences, Head of the Department of "Mathematical and Computer Modeling", D. Serikbayev East Kazakhstan state technical university, **R. Tyulyubergenev,** Mathematics teacher, NIS Ust-Kamenogorsk ChB
23	**Mathematical modeling of geometric fractals and their application** Silver medal, XI International competition of scientific projects "Mathematics and Design", section 'Mathematical models of real processes in nature and society', Moscow, Russian Federation, April 29 – May 3, 2017. **Author: Zhantore Issatayev,** Grade 11, NIS Atyrau ChB **Supervisor: Zh. Adilgaliyeva**, teacher-moderator, NIS Atyrau ChB
24	**"QI-Vita" – a mobile glove for electropuncture diagnostics** Diploma of the Ministry of Investments and Development, Republic of Kazakhstan, special prize Ipad 7, National Innovation Competition of the Ministry of Investment and Development within the framework of the XII Innovation Congress, nomination 'Biomedical Track', Astana, 2017. **Author: Alimzhan Kenesbekov,** Grade 11, NIS Almaty ChB **Supervisor: M.Mukanova,** Computer Science teacher, Master of Technical Sciences, NIS Almaty ChB
25	**Preparation of magnetic liquids based on strontium hexaferrite nanoparticles of various morphologies** III degree diploma II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Author: Alisher Kaydarov**, Grade 10, NIS Pavlodar ChB **Supervisors: L.Trussov,** Candidate of Chemical Sciences, Moscow State University, Moscow**, T.Abdrakhmanova,** Chemistry teacher-expert, NIS Pavlodar ChB

26	**Express method for determining the quality of food with the use of urease** I degree diploma II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Author: Roman Bauer,** Grade 9, NIS Pavlodar ChB **Supervisor: T.Abdrakhmanova,** Chemistry teacher-expert, NIS Pavlodar ChB
27	**The ways of reduction of air pollution in Ekibastuz town** II place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Author: Yrysgul Makym,** Grade 12, NIS Pavlodar ChB **Supervisor: A. Beysenbayev,** GPPW teacher**,** Master of Philosophy, NIS Pavlodar ChB
28	**Fashion of using hashtag and its influence on the modern Russian language** 1st place, XXI International Research-to-Practice Conference "Linguistics for All" for students of Grades 6 – 11 and undergraduate students, Moscow, Russian Federation, March 2017 **Author: Alua Mustafina**, Grade 10, NIS Pavlodar ChB **Supervisor: U. Sukhaninskaya**, teacher of the Russian Language and Literature, NIS Pavlodar ChB
29	**Archaeological monuments of Bayanaul National Park, as objects of historical and cultural tourism** III degree diploma International Research-to-Practice Conference of Students "XVII Kolmogorov Readings", MSU, Moscow, Russian Federation, May 3-6, 2017 **Author: Zarina Sagitova,** Grade 12, NIS Pavlodar ChB **Supervisor: O. Pityukova,** History teacher-expert, NIS Pavlodar ChB **Scientific adviser: Ye. Abeuova,** Research Associate, Margulan Centre, Regional Archaeological Centre
30	**Afghan war: analysis of change in attitudes in society** III degree diploma, International Research-to-Practice Conference of Students "XVII Kolmogorov Readings", MSU, Moscow, Russian Federation, May 3-6, 2017. **Author: Iskander Bek,** Grade 8, NIS Pavlodar ChB **Supervisor: O. Pityukova,** History teacher-expert, NIS Pavlodar ChB
31	**Development of the concept of stationary module "Baby box" to create favorable conditions for breastfeeding in residential areas of the cities in Kazakhstan** 2nd place II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Author: Assem Zhumanova,** Grade 12, NIS Pavlodar ChB **Supervisors: K. Konkyshev, R. Togaybayev,** Geography and History teachers, NIS Pavlodar ChB
32	**Development of "Anthropometric determinant" software as a tool to solve problems on determining sex and age based on bone remains** 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Author: Azat Yedilov,** Grade 10, NIS Pavlodar ChB **Supervisors: A. Tkachenko,** Research Associate, Pavlodar State Pedagogical Institute, **B. Mukushev, G. Zholdasbekova,** history teacher-moderator and computer science teacher, NIS Pavlodar ChB

33	**Fortified (with iron) forage for animals using the method of hydroponics** 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Author: Abylaikhan Mustafin,** Grade 11, NIS Pavlodar ChB **Supervisor: G. Assylbekova,** Candidate of Biological Sciences, Department of Geography and Chemistry, Pavlodar State Pedagogical Institute, **B. Koschegulova,** Biology teacher-moderator, NIS Pavlodar ChB
34	**Restaurant automation** Bronze medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Vladlen Lee,** Grade 10, NIS Shymkent ChB
35	**Physics electronic portal** Bronze medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Author: Anel Samadulla,** Grade 11, NIS Shymkent ChB
36	**VEX IQ Challenge. VEX Robotics Competition** Gold medal in the category VEX EDR junior team, IX All-Russia Robotic Festival "RoboFest-2017", Moscow, Russian Federation, March 2017. **Authors: Arman Abakov, Tamerlan Zharmagambetov, Bakhniyar Temirov**, Grades 8 and 9, NIS Almaty PhM **Supervisor: Nurdaulet Dosmagambet,** head of the TECHNOTORIA laboratory, NIS Almaty PhM
37	**VEX IQ Challenge, VEX Robotics Competition** Silver medal in the category on VEX EDR senior team IX All-Russia Robotic Festival "RoboFest-2017", Moscow, Russian Federation, March 2017. **Authors: Daniyar Turganbayev, Zhangir Siranov,** Grades 12 and 9, NIS Almaty PhM **Supervisor: Nurdaulet Dosmagambet,** head of the TECHNOTORIA laboratory, NIS Almaty PhM
38	**Mobile application QamCare** The Grand Prix, International competition for programming Technovation Challenge, San Francisco, USA, August, 2017. **Authors: a team of schoolgirls from Kazakhstan,** including **Diyara Beysenbekova,** Grade 10, NIS Almaty PhM **Supervisor: Nurdaulet Dosmagambet,** head of the TECHNOTORIA laboratory, NIS Almaty PhM
39	**Robotic satellite for collecting and desposing space rubbish** Gold medal, XIII International scientific competition in space research "Discovering the World of Science", section 'Ecology and Space Activities', Baikonur, 2017. **Authors: Ratmir Sartbayev, Anatoly Alekseyev**, Grade 10, NIS Taldykorgan PhM **Supervisor: N. Avdyunin**, Robotics trainer, NIS Taldykorgan PhM
40	**Determininig numerical parameters of various types of variable stars based on their light curves** Silver medal, XIII International scientific competition in space research "Discovering the World of Science", section 'Astrophysics and Evolution of the Universe', Baikonur, 2017. **Authors: Aisana Nagatay, Ansar Smagulov**, Grade 9, NIS Almaty PhM
41	**Numerical simulation of the evolution of active galactic nuclei** Bronze medal, XIII International scientific competition in space research "Discovering the World of Science", section 'Astrophysics and Evolution of the Universe', Baikonur, 2017. **Authors: Assel Surshanova, Adina Dzhubangaliyeva**, Grades 11 and 10, NIS Almaty PhM **Supervisor: A. Naurzbayeva**, Candidate of Physical and Mathematical Sciences, Al-Farabi Kazakh National University

42	**Development of a model of a hybrid system of power supply for space vehicles** Bronze medal, XIII International scientific competition in space research "Discovering the World of Science", section 'Space Technology and Infrastructure', Baikonur, 2017. **Authors: Rushan Salavatov, Alina Khafizova**, Grade 10, NIS Petropavlosk ChB
43	**Creating the application "History of Shymkent"** Silver medal, International competition in computer projects "INFOMATRIX-ASIA", Suleyman Demirel University, Almaty, Kazakhstan, April 13-16, 2017. **Authors: Amirkhan Otemis, Ayzhigit Musali,** Grade 11, NIS Shymkent PhM
44	**Main causative agents of cucumber diseases in the open ground** Bronze medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Flora and Fauna', Korolev, Russian Federation, April 17-22, 2017. **Authors: Azhar Tursynaliyeva, Anel Alken,** Grades 10 and 9, NIS Almaty ChB
45	**Wormwood as one of the most effective natural hygiene products** Silver medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Flora and Fauna', Korolev, Russian Federation, April 17-22, 2017. 2nd degree diploma, Republican competition of scientific projects, 2017. **Authors: Aray Adylkhan, Oksana Dmitriyenko,** Grade 11, NIS Taldykorgan PhM **Supervisor: V.Myamin**, Candidate of Biological Sciences, Associate Professor of microbiology department, Belarusian State University
46	**Autochthonous and endemic fish species in the river Karatal** Silver medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'City in which I live', Korolev, Russian Federation, April 17-22, 2017. **Authors: Sanzhar Mukatayev, Arzygul Abdrakhmanov,** Grade 9, NIS Taldykorgan PhM **Supervisor: S. Kobegenova**, Candidate of Biological Sciences, Professor of the Department of Biodiversity and Bioresources, Faculty of Biology, Al-Farabi Kazakh National University
47	**Sivers apple tree is an endemic species from Kazakhstan and the ancestor of Aport** Silver medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Let's Save Our Earth', Korolev, Russian Federation, April 17-22, 2017. **Authors: Aydana Koldasbayeva, Ayana Tastanbekova,** Grade 9, NIS Taldykorgan PhM **Supervisor: S. Bakhtaulova**, Candidate of Biological Sciences, Associated Professor, Director of the Centre for Science and Strategic Development, Zhetysu State University named after I. Zhansugurov
48	**Essential oils of wormwood smooth, green and shrubs in preparation of environmentally friendly natural products** Gold medal, 18 All-Russian Olympiad "Constellation" of scientific research and educational projects of children and youth on environmental issues "Man-Earth-Space", nomination 'Flora and Fauna', Korolev, Russian Federation, April 17-22, 2017. **Authors: Elina Smagulova, Olga Shutilina,** Grade 10, NIS Karaganda ChB **Supervisor: G. Atazhanova,** Head of the Terpenoid Chemistry Laboratory, Corresponding Member of the National Academy of Sciences of the Republic of Kazakhstan, Doctor of Chemical Sciences, Professor, Karaganda State University named after academician Ye.Buketov **Consultant: K. Zholdybayeva,** Biology teacher, NIS Karaganda ChB

49	**Air 'wolf' as a means of combating the midge** 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Authors: Azat Yedilov, Aydana Saginova,** Grade 10, NIS Pavlodar ChB **Supervisor: B. Mukushev**, History teacher-moderator, **K. Konkyshev**, Geography teacher, NIS Pavlodar ChB
50	**Optimal coding of information in the Kazakh language** Silver medal, XI International competition of scientific projects "Mathematics and Design", section 'Science of Mathematics', Moscow, Russian Federation, April 29 – May 3, 2017. **Authors: Assemgul Alpysbayeva, Yerkegul Alpysbayeva,** Grade 10, NIS Kokshetau PhM **Supervisors: K. Mussabekov,** Candidate of Physical and Mathematical Sciences, Sh. Ualikhanov Kokshetau State University, **N. Abdrakhmanova,** Mathematics teacher, NIS Kokshetau PhM
51	**Influence of various effects on the increase of golden sweet clover seed germination in dry-steppe conditions of Pavlodar region** 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Authors: Nailya Mustafina, Irina Yakupova**, Grade 10, NIS Pavlodar ChB **Supervisors: K. Konopyanov,** Doctor of Agricultural Sciences, Professor, Pavlodar State Pedagogical Institute, **D. Karashasheva,** Biology teacher-moderator, NIS Pavlodar ChB
52	**Track for cyclists – a guarantee of ecological compatibility of the environment** 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Authors: A. Serikova, A. Khazhmuratova**, Grade 9, NIS Pavlodar ChB **Supervisor: M. Mugrazh**, Physics teacher, Master of Physics, NIS Pavlodar ChB
53	**A robot to collect garbage from the water surface** 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Authors: Zh. Sartay, A. Shalayeva,** Grade 9, NIS Pavlodar ChB **Supervisors: M. Mugrazh**, Physics teacher, Master of Physics, **K. Magauin,** Computer science teacher, NIS Pavlodar ChB
54	**Reconstruction of the technological process of creating a bone lining for a bow** II degree diploma International Research-to-Practice Conference of Students "XVII Kolmogorov Readings", MSU, Moscow, Russian Federation, May 3-6, 2017. **Authors: Yerniyaz Bazylov, Nikita Romanov,** Grade 10, NIS Pavlodar ChB **Supervisor: O. Pityukova,** History teacher-expert, NIS Pavlodar ChB **Scientific adviser:** Ye.Tusheva, Research Associate at the Margulan Centre of the Regional Archaeological Centre

55	**Use of digital technologies to reduce the negative impact of tourist activities on the landscapes of Bayanaul National Park** 2nd place International Innovation Competition "New Inseption-2017", nomination 'Creative Approach of the Year', Kazan, Russian Federation, April 26, 2017. 1st place, II International Contest "New Ideas", Dostoevsky Omsk State University and Pavlodar State Pedagogical Institute, nomination 'Best Research Work by School Student', Pavlodar, Kazakhstan, November 24, 2017. **Authors: Alima Smagulova**, **Yerkebulan Sapar**, Grades 9 and 10, NIS Pavlodar ChB **Supervisors: S. Mogilyuk**, Candidate of Geographic Sciences, Head of Public Association "ECOM", **T. Kassymov**, Master of Geography, Geography teacher-moderator, NIS Pavlodar ChB
56	**Modeling the effect of heavy metals on the physiological parameters of plants** II place XI Open International Research Conference of Young Researchers "Education. Science. Profession", Samara, Russian Federation, January 24, 2017. **Authors: A. Omarbekov, A. Mukhametkhanova**, Grade 9, NIS Ust-Kamenogorsk ChB **Supervisors: M. Popova**, Associate Professor of the Department of Chemistry, Sarsen Amanzholov East Kazakhstan State University, **G. Shamatova**, Chemistry teacher, NIS Ust-Kamenogorsk ChB
57	**Folk songs of Russian immigrants in Eastern Kazakhstan as a way of preserving their native language** 3rd degree diploma, XXI International "Linguistics for All" for students of Grades 6 – 11 and undergraduate students, Moscow, Russian Federation, March 2017 International Moscow Research-to-Practice Conference "Linguistics for All" on the theme "Language and the world of human hobbies", section 'Language mosaic', Moscow, Moscow Pedagogical University, February 28 – March 2, 2017 **Authors: Anastasiya Argunova**, **Doszhan Madeniyetov**, Grade 11, NIS Ust-Kamenogorsk ChB **Supervisor: M. Yanko**, teacher of the Russian Language and Literature, NIS Ust-Kamenogorsk ChB
58	**Device "Oqyp kör"** 1st place and a cash prize of 1 000 000 million tenge, Republican youth competition of innovative projects "Nurintech", nomination 'Socially significant innovations', Astana, December 25, 2017. **Authors: Luybov Dudchenko, Selimzhan Chalyshkan**, Grade 9 and 11, NIS Almaty PhM

INTERNATIONAL AWARD AND OLYMPIAD WINNERS

Participation in intellectual and subject contests and olympiads increases the quality of learning and extra-curricular activities, broaden the horizons, and enhances subject knowledge. Below you can find a list of the NIS learners who won prizes at international contests and olympiads in 2017.

Kazhymurat Aknazar (NIS Almaty PhM) was awarded a gold medal at the 48th International Physics Olympiad (IPhO) in Yogyakarta (Indonesia); a gold medal at the XIII International Zhautykov Olympiad in Mathematics, Physics and Computer Science, (Almaty); a gold medal at the National Physics Olympiad (Pavlodar); a bronze medal at the 18th Asian International Physics Olympiad (Yakutsk); and, published a scientific article entitled 'Bernstein Sato polynomials in algebraic geometry', which was presented at the VII European Congress of Mathematics (Berlin, Germany).

Arman Abakov (NIS Almaty PhM) was awarded a gold medal in the junior category at the VEX EDR IX all-Russian Robotic Festival, Moscow (Russia).

Rakhimzhan Aimaganbetov (NIS Aktau) was awarded a gold medal at the International computer project-based competition (Computer Science) INFOMATRIX.

Indira Ailtkulova (NIS Karaganda) was awarded a gold medal at the Exploring the Science World International Space Research Competition, and a gold medal at the national scientific projects contest.

Dulat Aldazharov (NIS Ust-Kamenogorsk) was awarded a gold medal at the Sozvediye International Olympiad, and the Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth, and a silver medal at the national scientific projects contest.

Sandugash Andamassova (NIS Almaty ChB) was awarded a gold medal at the Dzholdasbekov International Scientific Projects Competition in Maths and Mechanics.

Raukhat Arkulov (NIS Astana PhM) was awarded a gold medal at the INFOMATRIX International Computer-Based Project Competition.

Talgat Akhmetzhanov (NIS Karaganda) was awarded a gold medal at the International Mathematics and Design Scientific Contest.

Anatoli Alekseyev (NIS Taldykorgan) was awarded a gold medal at Exploring the Science World International Space Research Competition.

Anuar Daniyar (NIS Kokshetau) was awarded a gold medal at the International Mathematics and Design Scientific Contest.

Darmen Yermenov (NIS Almaty ChB) was awarded a gold medal at the Dzholdasbekov International Scientific Projects Competition in Maths and Mechanics.

Tamerlan Zharmagambetov (NIS Almaty PhM) was awarded a gold medal in junior category at VEX EDR IX Russian Robotics Festival, Moscow (Russia).

Dinmukhamed Zholdybai (NIS Shymkent PhM) was awarded a gold medal at the INFOMATRIX International Computer-Based Project Competition.

Anton Morgunov (NIS Taldykorgan PhM) was awarded a gold medal at the 49th International Olympiad in Chemistry (ICHO) (Nakhon Pathom, Thailand); a gold medal at the National Olympiad in General Education Subjects; a gold medal at the National Olympiad in Chemistry (Pavlodar); a scholarship to Lomonosov Moscow State University; and, was awarded a first place diploma at the 51st Mendeleyev International Chemistry Olympiad.

Saya Maratova (NIS Ust-Kamenogorsk) was awarded a gold medal at the Sozvediye International Olympiad; Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth; and, a gold medal at the National Scientific Projects Competition.

Zhibek Mubinov (NIS Atyrau) was awarded a gold medal at the International Olympiad Sozvediye International Olympiad; and, at the Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Temirlan Nurligenov (NIS Karaganda) was awarded a gold medal at the Asian Pacific International Mathematics Olympiad; was awarded a certificate

of honour at Tuymaada-2017, the XXIV International Olympiad in Mathematics, Physics, Chemistry and Computer Science (the Sakha Republic, Yakutia).

Ratmir Sartbayev (NIS Taldykorgan) was awarded a gold medal at Exploring the Science World International Space Research Competition.

Asset Seksenali (NIS Almaty PhM) was awarded a gold medal at the Sozvediye International Olympiad/ Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth; and, a silver medal at the National Scientific Projects Competition.

Elina Samgulova (NIS Karaganda) was awarded a gold medal at the Sozvediye International Olympiad/ Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Arslan Sagintayev (NIS Astana) was awarded a gold medal at the International Mathematics and Design Scientific Contest.

Bakhniyar Temirov (NIS Almaty PhM) was awarded a gold medal in junior category at the VEX EDR IX Russian Robotic Festival, Moscow (Russia).

Daniyar Tulenov (NIS Pavlodar) was awarded a gold medal at Tuymaada-2017, the XXIV International Olympiad in Mathematics, Physics, Chemistry, Computer Science (the Sakha Republic, Yakutia); a silver medal at the National Olympiad in Physics (Pavlodar); a bronze medal at the Zhautykov International Olympiad in Mathematics, Physics and Computer Science; and, a bronze medal at the International Junior Physics Olympiad.

Sunkar Tursyngali (NIS Almaty ChB) was awarded a gold medal at the Dzholdasbekov International Scientific Projects Competition in Maths and Mechanics.

Bekzat Tolekov (NIS Almaty ChB) was awarded a gold medal at the Dzholdasbekov International Scientific Projects Competition in Maths and Mechanics.

Aidan Turlanov (NIS Aktobe) was awarded a gold medal at the INFOMATRIX International Computer-Based Project Competition.

Dias Urazov (NIS Aktobe) was awarded a gold medal at the INFOMATRIX International Computer-Based Project Competition.

Olga Shutilina (NIS Karaganda) was awarded a gold medal at the Sozvediye International Olympiad/ Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Arai Adylkhan (NIS Taldykorgan) was awarded a gold medal at the Sozvediye International Olympiad/ Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Assemgul Alpysbayeva and Yerkegul Alpysbayeva (NIS Kokshetau) was awarded silver medals at the International Mathematics and Design Scientific Contest.

Abai Loran Almukhametov (NIS Atyrau) was awarded a silver medal at Exploring the Science World International Space Research Competition.

Oksana Dmitrienko (NIS Taldykorgan) was awarded a silver medal at the Sozvediye International Olympiad/ Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Tengiz Ibrayev (NIS Semey) was awarded a bronze medal in physics at Tuymaada-2017, the XXIV International Olympiad in Mathematics, Physics, Chemistry, Computer Science (the Sakha Republic, Yakutia); and, a silver medal at the Republican Physics Olympiad (Pavlodar).

Zhantore Issatayev (NIS Atyrau) was awarded a silver medal at the International Mathematics and Design Scientific Contest.

Aidana Koldaspayeva (NIS Taldykorgan) was awarded a silver medal at the Sozvediye International Olympiad/ Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Ivan Krepak (NIS Almaty PhM) was awarded a silver medal at the INFOMATRIX International Computer-Based Project Competition.

Aiya Kuchukova (NIS Astana) was awarded a bronze medal at the National Maths Olympiad (Pavlodar); a silver medal at the Silk Way International Mathematical Olympiad; a silver medal at the Zhautykov International Olympiad in Mathematics, Physics and Computer Science.

Aizhigit Musali (NIS Shymkent PhM) was awarded a gold medal at the INFOMATRIX International Computer-Based Project Competition.

Sanzhar Mukatayev and Arzygul Abdrakhmanova (NIS Taldykorgan) was awarded silver medals at the Sozvediye International Olympiad/the Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Aisana Nagatai and Ansar Samgulov (NIS Almaty PhM) was awarded silver medals at the Exploring the Science World International Space Research

Competition; and bronze medals at the National Scientific Projects Competition.

Daniyar Nurmukhamet (NIS Ust-Kamenogorsk) was awarded a silver medal at the International Science Contest "Mathematics and Desing".

Alibek Orazalinov (NIS Semey) was awarded a silver medal at the Asian-Pacific International Mathematical Olympiad; and a silver medal at Silk Way International Mathematics Olympiad.

Amirkhan Otemis (NIS Astana PhM) was awarded a silver medal at the INFOMATRIX International Computer-Based Project Competition.

Artur Pak (NIS Taldykorgan) was awarded a bronze medal at the Silk Way International Mathematics Olympiad, a silver medal at International Zhautykov Mathematics, Physics, Computer Science Olympiad, a bronze medal at the Republican Mathematics Olympiad (Pavlodar).

Zhangir Siranov (NIS Almaty PhM) was awarded a silver medal in senior category at the VEX EDR IX Russian Robotic Festival, Moscow (Russia).

Daniyar Turganbayev (NIS Almaty PhM) was awarded a silver medal in senior category at the VEX EDR IX Russian Robotic Festival, Moscow (Russia).

Ayana Tastanbekova (NIS Taldykorgan) was awarded a silver medal at the Sozvediye International Olympiad/the Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Ayaz Almasbek (NIS Shymkent PhM) was awarded a bronze medal at the INFOMATRIX International Computer-Based Project Competition.

Anel Alken (NIS Almaty ChB) was awarded a gold medal at the Sozvediye International Olympiad/the Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Diyara Beisenbekova (NIS Almaty PhM) was a grand prize winner at the Technovation Challenge international competition (Google headquarters, San Fransisco, United States). Following the award ceremony, the winners met with Google CEO, Sundar Pichai who created the Chrome browser and other IT products.

Adina Dzhubangaliyeva (NIS Almaty PhM) was awarded a bronze medal at the Exploring the Science World International Space Research Competition.

Dalila Ibragimova (NIS Karaganda) was awarded a bronze medal at the INFOMATRIX International Computer-Based Project Competition.

Vladlen Li (NIS Shymkent PhM) was awarded a bronze medal at the INFOMATRIX International Computer-Based Project Competition.

Assylbek Olzhabayev (NIS Almaty PhM) was awarded a bronze medal at the Asian Pacific International Mathematics Olympiad (Pavlodar), was awarded with a certificate of honour at Tuymaada-2017, the XXIV International Olympiad in Mathematics, Physics, Chemistry, Computer Science (the Sakha Republic, Yakutia).

Aruzhan Sabyrbek (NIS Taldykorgan) was a winner of the European Girls' Mathematical Olympiad (EGMO) in Zurich, Switzerland; won a bronze medal at the Republican Maths Olympiad (Pavlodar), was awarded a third class diploma at the Leonardo Euler International Olympiad; a third class diploma at the National Olympiad on General Subjects; a third class diploma at the Alimkhan Yermekov National Olympiad; a certificate of honor at Tuymaada-2017, the International Olympiad in Mathematics, Physics, Chemistry, Computer Science (the Sakha Republic, Yakutia).

Assel Surshanova (NIS Almaty PhM) was awarded a bronze medal at the Exploring the Science World International Space Research Competition.

Rushan Salavat (NIS Almaty PhM) was awarded a bronze medal at the Exploring the Science World International Space Research Competition.

Anel Samadulla (NIS Shymkent PhM) was awarded a bronze medal at the INFOMATRIX International Computer-Based Project Competition.

Azhar Tursynaliyeva (NIS Almaty ChB) was awarded a bronze medal at the Sozvediye International Olympiad/the Human-Earth-Space Russian Academic Research Project Olympiad on Environmental Problems for Children and Youth.

Daniil Melnichenko (NIS Pavlodar) was awarded a certificate of honour at Tuymaada-2017, the International Olympiad in Mathematics, Physics, Chemistry, Computer Science (the Sakha Republic, Yakutia).

Alina Khafizova (NIS Almaty PhM) was awarded a bronze medal at the Exploring the Science World International Space Research Competition.

The share of prize-winning NIS learners grows with each year. More detailed information on the NIS activities in this area can found in section 6.2.

NIS Student Selection

The 'Orken' First President NIS Educational Scholarship for Gifted and Talented Children Awarding Regulations, approved by Government Decree #317, dated

The 'Orken' First President NIS Educational Scholarship for Gifted and Talented Children Awarding **Contest Regulations**, approved by the NIS Board of Trustees decision dated 29 February 2012 (minutes #1; with the amendments approved by NIS Board of Trustees decision #4, dated 23 December 2014);

The 'Orken' First President NIS Educational Scholarship for Gifted and Talented Children **Awarding Instruction**, approved by NIS Management Board decision #5, dated 11 February 2015;

The NIS Grade 1-6 Student Selection Regulations, approved by NIS Management **Board decision** #41, dated 1 August 2013 (with the amendments introduced by NIS Management **Board decision** #9, dated 02.03.2017);

The NIS Fee-based Learning Student Selection Regulations, approved by NIS Management **Board decision** #8, dated 23 February 2017 (with the amendments introduced by NIS Management Board decision #40, dated 11.08.2017);

The NIS Grade 7 Trial Testing Regulations, approved by NIS Management **Board decision** #33, dated 29 June 2017.

Virtual and Vacation Schools

The NIS Virtual School Operation Instruction, approved by the NIS Management Board decision dated 31 August 2012 (minutes #38), as amended by the NIS Management **Board decision** dated 26 February 2015 (minutes #7);

The NIS Vacation School Operation Instruction, approved by the NIS Management **Board decision** dated 31 August 2012 (minutes #38), as amended by the NIS Management Board decisions dated 26 February 2015 (minutes #7) and 11 January 2017 (minutes #1).

Assessment Procedures

The NIS Student Assessment Policy, approved by the NIS Management Board decision dated 15 August 2016 (minutes #39);

Criteria-based Assessment System

The Criteria-based Assessment Model, approved by the NIS Management Board decision dated 15 August 2016 (minutes #39);

The NIS Grades 1-5 and 7-9 Criteria-based Assessment Regulations, approved by the NIS Management Board decision dated 15 August 2016 (minutes #39);

The NIS Grades 10-12 Criteria-based Assessment Regulations, approved by the NIS Management Board decision dated 27 August 2015 (minutes #43);

The NIS Criteria-based Student Assessment Regulations, approved by the NIS Management Board decision dated 31 August 2012 (minutes #38);

The Nazarbayev Intellectual School of Astana Criteria-based Student Assessment Regulations, approved by the NIS Management Board decision dated 28 August 2014 (minutes #40);

Student Achievement Monitoring

The NIS Student Achievement Monitoring is governed by the NIS Student Assessment Policy, approved by the NIS Management Board decision dated 15 August 2016 (minutes #39) *(amended 17 August 2017, minutes #42);*

External Summative Assessment

The NIS External Student Assessment Model, approved by the NIS Management Board decision dated 28 August 2014 (minutes #40);

The NIS External Student Assessment Regulations, approved by the NIS Management Board decision dated 12 November 2015 (minutes #56);

The NIS External Student Assessment Instruction, approved by the NIS Management Board decision dated 14 December 2015 (minutes #62);

The Nazarbayev Intellectual School of Astana Final Examination Instruction;

Reporting and Issuing of Strictly Accountable Documents

NIS Regulations for Reporting and Issuing of Strictly Accountable Documents, approved by the NIS Management Board decision dated 18 March 2014 (minutes #13);

Provision on Common Format of NIS Education Documentation, approved by the NIS Board of Trustees decision dated 27 December 2013 (minutes #3).

Pastoral Work and Extra-curricular Activity

NIS Educational Activity Regulations, approved by the NIS Management Board decision dated 16 August 2012 (minutes #33);

Main Pastoral Work Areas, approved by the NIS Board of Trustees decision dated 29 November 2011 (minutes #4);

Main Pastoral Work Approaches, approved at the in-person meeting of the NIS Board of Trustees dated 29 February 2012 (minutes #1);

NIS Student Upbringing Policy, approved by the NIS Management Board decision dated 29 August 2013 (minutes #48);

Summer School Operation Instruction, approved by the NIS Management Board decision dated 4 May 2017 (minutes #22);

Tugan Elge Tagzym Area Study Expedition Regulations, approved by the NIS Management Board decision dated 12 June 2012 (minutes #25);

Model Provision for NIS Social Practices and Projects, approved by the NIS Management Board decision dated 5 May 2014 (minutes #21);

NIS Extra-curricular Event List, approved by the NIS Management Board decision dated 10 February 2016 (minutes #1).

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