

NAZARBAEV INTELLECTUAL SCHOOLS Autonomous educational organisation

2020

PART 1 WORK OF NAZARBAEV INTELLECTUAL SCHOOLS AEO

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Nazarbayev Intellectual Schools are the real social elevator for young people...

Nursultan Nazarbayev Elbasy and the First President of the Republic of Kazakhstan



December 11, 2020, Jas Otan V congress

Dear colleagues, teachers, parents and partners!

Nazarbayev Intellectual Schools AEO annually sums up the results of the work done and reviews the achievements and problems.

2020 was an ambiguous year and became a turning point for the entire world community: the world faced a new reality, and at the same time it provided new opportunities for the implementation of new approaches in teaching, learning and assessment.

The pandemic challenged the sustainability of our systems, whether they are useful in the virtual space and whether we have a basis for further development. At the same time, we realized once again that crucial components of the systems remain unchanged \neg in any circumstances.

School, as an educational institution, the teacher, as the main conveyor of knowledge, culture and values between generations, and interaction between participants of the educational process will always be in place. However, the communication process and adaptation to it can change.

Summing up the work, we have come to conclusion that thanks to the unity of the educational process participants, we managed to successfully introduce and implement distance \neg learning without compromising the quality of education.

In the 2019-2020 academic year, students and graduates of the Intellectual Schools –achieved significant results.

Calendar of key events in 2020



UNESCO Hamdan Award

The Centre of Excellence entered the TOP-10 of the UNESCO Hamdan 2020 award with the project "Professional Development of Teachers for the Renewed Education Content" among 190 participants from around the world.

October •



Global Teacher Award 2020

Two NIS teachers became Ambassadors of the Global Teacher Award 2020.

November



Order of Kurmet

Kassym-Jomart Tokayev, the President of Kazakhstan, presented the Order of Kurmet in recognition of special services to the country to MeiramAmirzhanovichZhakenov, the first director of the first Nazarbayev Intellectual School of Physics and Mathematics in Nur-Sultan.

December 🛏



Online advanced training course in Effective learning and teaching

NIS held an online training course on Effective teaching and learning for 450 pedagogical workers from the Khanty-Mansi Autonomous Okrug – Yugra. The course was based on the professional development programme in teaching methods and technology certified by the Accreditation, Certification and Quality Assurance Institute ACQUIN (Germany).



Launching the Grade 1 with English as the language of instruction at International School of Nur-Sultan.

A preschool group with English as the language of instruction guided by an international and a local teacher was opened in the kindergarten of International School of Nur-Sultan.

November -



"Mynbala" Project

The joint efforts of corporate fund "Academy of Elbasy", the Ministry of Education and Science, and Nazarbayev Intellectual Schools AEO to support and develop gifted children from rural areas resulted in a unique project "Myn Bala" (One Thousand Children) in the format of National Olympiad. The 1000 winners were offered admission to specialized schools for gifted children.

November



"Powered by NIS" Project

Nazarbayev Intellectual Schools AEO initiated the "Powered by NIS" Project, which is implemented in 14 rural schools in 6 regions of the country. NIS developed recommendations on improving the conditions and quality of providing educational services in rural areas. Teacher training was organised. Sponsors provided financial support for major repairs, purchased furniture and classroom equipment for Computer science, Robotics and Crafts.

January



NIS conference:"History of independent Kazakhstan based upon the works of the First President of Kazakhstan NursultanNazarbayev"

February -



"Teacher of the Year" NIS contest

20 winners of school competitions took part in the NIS contest "Teacher of the Year". The Grand Prix award was given to Dina Beisembayeva, Chemistry teacher of the Intellectual School of Nur-Sultan. The first place was given to Kamila Rakhymzhanova, English teacher of NIS Semey.

February -









"Online-mektep" educational platform

The "Online-mektep" educational platform for distance learning has been created in partnership with Bilim Land, onlinemektep.org.

September -



DISTANCE LEARNING STUDENT POPULATION

1.1

1.2



Competitive student selection Virtual and vacation schools

1.4

Organisation of distance learning in the Intellectual Schools

Network and student population

1.1. Organization of Distance learning in the Intellectual Schools

The World Health Organisation declared COVID-19 a global pandemic on March 11, 2020.

Due to the nation-wide state of emergency introduced in Kazakhstan (Decree of the President of Kazakhstan № 285 dated March 15, 2020) and order of the Ministry of Education and Science (№ 108 dated March 14, 2020), the Board of the "Nazarbayev Intellectual Schools" Autonomous Educational Organisation set out to start distance learning of NIS students since April 6, 2020 with the use of online educational technologies.

In order to effectively organise distance learning across the Intellectual Schools and solve all relevant issues, NIS created a Working Group consisting of methodologists, IT and assessment specialists, curriculum developers, psychologists and managers. The NIS Working Group had to solve a challenging task of ensuring the transition to distance learning in a short time.

The Working Group identified the main requirements for the transition of Intellectual Schools to distance learning. These include:

1. maintaining health of teachers and students in the context of pandemic;

2. providing NIS students with quality and continuous education/learning in the context of pandemic;

3. providing technical, methodological and psychological support to students, teachers, parents and schools in the context of pandemic.

Also, the Working Group set specific objectives for the implementation of distance learning:

1.Study international experience in distance learning in secondary school, in particular, during the state of emergency; analyse technologies of effective implementation;

2. Create conditions and ensure a highquality educational process in the context of distance learning;

3. Personalise educational programmes, model course plans, and school schedule. To decide which subjects and lessons can be studied remotely;

4. Align the expected learning outcomes across subjects and additional classes with the opportunities of distance learning;

5. Ensure school teachers and students are ready for distance learning;

6. Timely inform students and their parents on the introduction of distance learning;

7. Provide technical support (call centre) for teachers and students.

8. Introduce distance learning into the educational process;

9. Monitor the effectiveness of the educational process with the use of distance learning technologies and to give recommendations for mass transition to distance learning, if necessary;

10. Develop regulatory framework in the context of organisation and implementation of distance learning.

By the beginning of Term 4, 2019-2020 academic year, NIS developed legal framework for regulating the educational activity of Intellectual Schools in the context of distance learning:

1. The rules for organising educational activity of the "Nazarbayev Intellectual Schools" Autonomous Educational Organisation in the context of distance learning, approved by the decision of the NIS Board on March 27, 2020 (Protocol No. 9);

2. Distance learning guidelines for students of Nazarbayev Intellectual School of Nur-Sultan and International School of Nur-Sultan, approved by the decision of the NIS Board on 27 March, 2020 (Protocol No. 9).

The duration of online lessons in the format of video conference was determined to be 20 minutes based on the study of international practice and in accordance with sanitary requirements of the Ministry of National Economy approved on 21 January, 2015, Order No. 38 "Sanitary and epidemiological requirements for work conditions involving the sources of physical factors (computers and video materials) that have an impact on human health". The duration of lessons at the Nazarbayev Intellectual School of Nur-Sultan was determined to be 30 minutes due to the peculiarities of International Baccalaureate programmes.

Microsoft Office 365 Teams software product was chosen as a platform for delivering distance learning to students of 20 Intellectual NAZARBAYEV INTELLECTUAL SCHOOLS AUTONOMOUS EDUCATIONAL ORGANISATION 2020

Schools (except for the Intellectual School of Nur-Sultan).

NIS developed guidelines for distance learning in Microsoft Teams for all participants of the educational process. All NIS students and teachers were provided with Microsoft Teams accounts administered by IT specialists. Centralised account administration and differentiated access rights, user-friendly interface and infrastructure for collaboration and learning, high-quality videoconferencing and a set of useful extensions contributed to the success of MS Teams in all Intellectual schools.

In the Intellectual School of Nur-Sultan, distance learning was implemented using information and communication technologies of Google G Suite for Education, Google Meet and Google Classroom. These applications were chosen since the school implements International Baccalaureate MYP and DP programmes.

Monitoring of students, parents (legal representatives) and teachers of the Intellectual Schools helped identify the technical capabilities for implementing to distance learning, the opportunities for conducting online lessons in the format of video conference: access to the Internet, availability of hardware (computer/laptop/ tablet, headphones, microphone, webcam).

The monitoring showed that some students and teachers did not have hardware and access to the Internet. To solve these problems and provide technical support, NIS students and teachers were provided with school laptops and socially vulnerable students – with 4G routers connected to the Internet.

Parents' meetings have been organised to explain the need to provide students with the necessary technical means for distance learning through Microsoft Teams. Parents were given recommendations on how to create conditions for students' distance learning at home.

Students and teachers were instructed about the software capabilities and the specifics of implementing distance learning in Microsoft Teams and Google Classroom.

NIS organised trial lessons to check whether students, teachers and parents were ready for distance learning, and to test Microsoft Teams, Google Classroom and Internet connection. "Distance learning" section was created on the NIS websites to inform the participants of the educational process on the introduction of distance learning, including contact details of people responsible for distance learning.

NIS provided technical and consulting support to all users of the NIS school community. A Telegram-bot (@Teams_manual_bot) has been launched, where users can receive tutorials and videos on using Microsoft Teams, get recommendations on the implementation of distance learning and contact the technical support chat.

Subject coordinators of the Centre for Educational Programmes consulted teachers via call-centres and online chats in Microsoft Teams. Teachers created a database in the Microsoft Office OneDrive including materials for consolidating knowledge and tasks for formative and summative assessment, homework assignments and other educational resources for each lesson in accordance with subject course plan, and made it available for students.

NIS delivered 20 webinars to provide teachers with methodological support. The webinars were devoted to various priorities to make distance learning effective. Teachers developed course plans for a week and a term, learnt to keep students' attention during online lessons, to use formative assessment tools, and give feedback. In terms of the professional dialogue, trainers of the Centre of Excellence analysed the results of a large-scale observation, i.e. more than 300 online lessons in 11 subjects in Grades 7-11 of the Intellectual Schools observed in April.

In June-August 2020, staff members of the NIS Central office, branches, administration and teachers took part in online training to improve ICT skills, use MS Office tools (Outlook, SharePoint, OneDrive, OneNote, Forms, Teams) and distance learning tools and information security issues. More than 2500 NIS staff members took part in 70 webinars and live broadcasts.

| Stage | Date | Trainees | Programme | Number of webinars | Attendance |
|-------|---------------------------------|--|--|-----------------------|-------------------|
| 1 | 22 June - 3 July | Central office and branches | Outlook, SharePoint, OneDrive, OneNote, Forms, Teams | 20 | 250 out of 651 |
| 2 | 10-12 August | School administration | Outlook, SharePoint, OneDrive, OneNote, Forms, Teams | 10 | 297 out of 495 |
| 3 | 21, 24, 25 August | Teachers | Additional distance learning tools | 36 | |
| 4 | 26-27 August | Teachers | Teams, class notebook | 2 | 1854 |
| 5 | 28 October | Central office, branches and school administration | Information security | 1 | 603 |
| 6 | 30 October | Teachers | Information security | 1 | 1003 |
| 7 | September 2020 – May 2021 | All employees | MS Office skills | 8 | |

Webinar schedule

The educational process at the Intellectual Schools was implemented using digital technologies both in real time (webinar, group video conference, group and individual consultations) and with a time delay (recording a webinar, recording a group video conference, subject-specific assignments for independent work, providing individual feedback, etc.).

The Intellectual Schools constantly monitored students living in remote areas with low Internet connection or without access to the Internet. Subject teachers and tutors recorded attendance of students in online lessons delivered via Microsoft Teams. Tutors informed parents (legal representatives) on the educational process with the use of distance learning technologies, changes in the schedule, feedback provided to students, learning progress and outcomes, need to create conditions for students' independent work, and kept 'in touch' with students and their parents (legal representatives).

In the first half of the 2020-2021 academic year, secondary and high school students of the International School of Nur-Sultan proceeded to study remotely. One part of primary school students studied remotely, the other part – at the written request of parents –in specially equipped traditional classrooms.

Prior to the 2020-2021 academic year, NIS developed methodological guidelines for teachers on lesson content and assessment of student learning outcomes: Methodological guidelines for the organisation of distance learning in PE, Basic military training, and Arts in Nazarbayev Intellectual Schools.

NIS delivered webinars for teachers in summative assessment and provided teachers with continuous methodological support in online chats, groups and etc.

To provide timely support to students NIS conducted an online monitoring in early September, 2020, to identify the gap in students' knowledge and skills across school subjects studied remotely in Term 4, 2019-2020 academic year.

Following the monitoring results, specialists of the Centre for Pedagogical Measurements provided reports across subjects and learning objectives (at the school, grade, class, and student level). It helped teachers to identify educational needs of students and increase the effectiveness of activities intended to eliminate the gap in student knowledge and skills in the context of distance learning in Term 1, 2019-2020 academic year.

Considering student and parent needs identified at the end of Term 4, a series of webinars were held, teachers received recommendations on how to support students in the context of pandemic and distance learning, prevent family conflicts, excessive Internet use, cyberbullying, respond to the emotional states of teenagers and etc.

NIS launched a dialogue platform "School and Family in a Changing World" where parents could address school administration questions related to the distance learning. NAZARBAYEV INTELLECTUAL SCHOOLS AUTONOMOUS EDUCATIONAL ORGANISATION 2020

A two-cycle research on the implementation of distance learning was conducted among students, parents (legal representatives) and teachers of the Intellectual schools. The conclusions drawn from this research are a valuable guide for action on the effective implementation of distance learning for each Intellectual school, all participants of the learning process, and employees of the NIS Central Office, Centres and branches.

The first cycle took place in April of the 2019-2020 academic year and involved 2 200 teachers, 10 607 students and 9 340 parents.

The second cycle of data collection took place in Term 1 of the 2020-2021 academic year and involved 2 087 teachers, 9 697 students and 9 833 parents.

To increase sustainability of the Intellectual schools, NIS regularly consulted all the participants of the educational process including teachers, students and their parents (legal representatives).

Distance learning demonstrated the importance of digital educational technologies and the need for introducing them in educational process. They can help build the personalized learning model and adapt the learning process to the needs, pace and abilities of each student.

Considering the post-pandemic period, we need to rebuild the familiar learning environment for our students.

1.2. Network and student population

As of the end of 2020, 15 302 students study at 20 Intellectual Schools (see table), 1 309 students – in the International School of Nur-Sultan, including 129 children in the kindergarten, and 2 657 students – in RPhMS, including 1 357 students in its branch in Nur-Sultan.

| | Table. Number og | f Intellectual : | school | students b | v arades | (as o | f December | 10, | 2020) |
|--|------------------|------------------|--------|------------|----------|-------|------------|-----|-------|
|--|------------------|------------------|--------|------------|----------|-------|------------|-----|-------|

| Schools | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 | Total for Grade 9+10 (accelerated learning) | Grade 9 | Grade 10 | Grade 11 | Grade 12 | TOTAL |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---|---------|----------|----------|----------|-------|
| Nur-Sultan PhM | | | | | | 167 | 225 | 1 | 114 | 147 | 139 | 197 | 990 |
| Nur-Sultan IB | | | | | | 166 | 143 | | 178 | 179 | 132 | 155 | 953 |
| Aktau ChB | | | | | | 141 | 142 | 1 | 95 | 71 | 123 | 103 | 676 |
| Aktobe PhM | | | | | | 116 | 167 | | 138 | 77 | 158 | 113 | 769 |
| Almaty PhM | | | | | | 188 | 214 | | 144 | 165 | 140 | 141 | 992 |
| Almaty ChB | | | | | | 264 | 144 | 4 | 109 | 71 | 155 | 135 | 882 |
| Atyrau ChB | | | | | | 137 | 132 | 2 | 118 | 70 | 149 | 112 | 720 |
| Karaganda ChB | | | | | | 144 | 139 | | 136 | 83 | 137 | 130 | 769 |
| Kokshetau PhM | 59 | 60 | 56 | 53 | 54 | 144 | 110 | | 76 | 65 | 109 | 62 | 566 |
| Kostanay PhM | | | | | | 120 | 117 | | 92 | 72 | 83 | 125 | 609 |
| Kyzylorda ChB | | | | | | 144 | 166 | | 115 | 76 | 109 | 95 | 705 |
| Pavlodar ChB | | | | | | 144 | 156 | | 95 | 69 | 105 | 101 | 670 |
| Petropavlovsk ChB | | | | | | 144 | 143 | | 78 | 62 | 121 | 129 | 677 |
| Semey PhM | | | | | | 144 | 142 | 2 | 95 | 69 | 136 | 111 | 699 |
| Taldykorgan PhM | 59 | 58 | 55 | 55 | 51 | 143 | 120 | | 86 | 75 | 100 | 67 | 591 |
| Taraz PhM | | | | | | 119 | 192 | | 128 | 70 | 92 | 119 | 720 |
| Uralsk PhM | | | | | | 120 | 167 | | 110 | 79 | 119 | 112 | 707 |
| Ust-Kamenogorsk ChB | | | | | | 120 | 144 | | 90 | 60 | 101 | 100 | 615 |
| Shymkent PhM | | | | | | 142 | 144 | | 112 | 80 | 144 | 94 | 716 |
| Shymkent ChB | | | | | | 120 | 142 | | 119 | 91 | 152 | 92 | 716 |
| Total | 118 | 118 | 111 | 108 | 105 | 2927 | 3049 | 10 | 2228 | 1731 | 2504 | 2293 | 15302 |

**Source: UIEE, "Students" section

Socioeconomic status of the school population:

| disabled children | < 50 (0,3%) |
|---|---------------------|
| children with disabled parents | < 328 (1,3%) |
| children from single-parent families | < 2 280 (15,5%) |
| children from large families and low-income families | < 2 825 (18,6%) |
| hildren from rural areas and small towns | < 2 450 (16,1%) |
| children under guardianship and trusteeship | < 25 (0,2%) |
| children whose parents are retired | < 618 (2,4%) |
| 1 child from an orphanage | |

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1.3. Competitive student selection

The system of competitive student selection of Nazarbayev Intellectual schools helps to assess and identify students' abilities to study sciences and mathematics through testing subject knowledge, functional literacy and language competencies. As a result, the students are selected who are able to effectively master the content of the NIS-Programme (develop deep academic knowledge, soft skills, learn three or more languages, etc.) and, upon graduation, enter the leading Kazakhstani and world universities.

Compliance of the competitive selection system with the international requirements for quality, validity, transparency and safety of all procedures is ensured through the joint work of the NIS and the Institute for Pedagogical Measurements Cito B.V., the Netherlands.

The competitive selection of students to Grade 7 is regulated by the Decree of the Government No. 317 dated March 14, 2009, and includes two comprehensive tests: a test to assess the ability to study mathematics and sciences (sections 'Mathematics' and 'Quantitative reasoning') and a language test (sections 'Kazakh language', 'Russian language', 'English language'). Due to the epidemiological situation in the country, the competitive selection of students was postponed from March 14-15 to June 20-21, 2020. **20 084** applicants took part in the competitive selection, which is the highest indicator for all years (increased by 14.9% or +2 599, compared to last year).

Following the results of the meeting of the Republican Commission for awarding the educational grant of the First President - Elbassy "Orken" (hereinafter - the Grant) dated August 14, 2020, **2 952** students were awarded the Grant. According to the results of the Republican Commission meeting on October 15, 2020, additionally **153** applicants from the reserve lists received the Grants for learning in Grade 7 of the Nazarbayev Intellectual schools. A total of 3 105 students were awarded the Grant to study in Grade 7 in the 2020-2021 academic year.

6.32% of the total number of Grade 6 students took part in the competitive selection. Most candidates come from Almaty (17.4%), Nur-Sultan (13.3%) and Shymkent (13.2%), the least - from Petropavlovsk (2.1%), Kokshetau (2.3%) and Kostanay (2.6%).

| Year of testing | Grant holders | Candidates | Candidates per 1 vacant place | Applications accepted | Applications accepted per 1 vacant place |
|-----------------------|------------------|------------|-------------------------------------|--------------------------|--|
| 2018 | 2 066 | 14 795 | 7,2 | 9 144 (61,8%) | 4,4 |
| 2019 | 2 552 | 17 485 | 6,9 | 9 803 (56,0%) | 3,8 |
| 2020 | 2 952 | 20 084 | 6,8 | 12 834 (63,9%) | 4,3 |

Table. Data on 2020 competitive selection as compared to 2018-19

In the reporting year there were **6.8 candidates** competing for 1 vacant place. At the same time, the number of candidates competing for each place in classes with the

Kazakh language of instruction is 1.7 times higher than that in the Russian language classes (8.1 and 4.9 respectively). In some areas (Nur-Sultan, Almaty, Kyzylorda, Shymkent, Atyrau),

¹ Further statistics on the competitive selection includes data on 2 952 students awarded the Grant on August 14, 2020 (first round).

the number of candidates competing for each place ranged from 8 to 11.

12 834 students, or 64% of those who took part in the competition, scored threshold

scores and were admitted to consideration of the Republican Commission (for comparison: in 2019, 56% of candidates were admitted).

Table. Results of the comprehensive testing within the competitive selection by schools (max. score - 1300)

| Intellectual School | The highest score | Candida took pa days o | ates who art in two f testing | Cand admitte conside the Re Comn | idates ed to the ration of publican nission | Grant holders | |
|---------------------|-------------------|------------------------------|-------------------------------------|--|---|-------------------------|-------------------------|
| | | The average score | The minimum score | The average score | The minimum score | The average score | The minimum score |
| Nur-Sultan PhM | 1 282 | 882,7 | 375 | 935 | 491 | 1 164,9 | 1 106 |
| Nur-Sultan IB | 1 280 | 872,7 | 380 | 938,2 | 473 | 1 175,1 | 1 122 |
| Almaty PhM | 1 268 | 871,3 | 384 | 940,1 | 513 | 1 176,8 | 1 1 2 9 |
| Almaty ChB | 1260 | 818,9 | 326 | 899,3 | 531 | 1 109,8 | 1 010 |
| Aktau ChB | 1175 | 715,9 | 304 | 824,8 | 521 | 1 024,7 | 925 |
| Aktobe PhM | 1 239 | 736,7 | 361 | 851,6 | 526 | 1 047,9 | 937 |
| Atyrau ChB | 1 242 | 726,7 | 345 | 839,4 | 513 | 1 034,9 | 946 |
| Kokshetau PhM | 1 195 | 764,9 | 322 | 873 | 574 | 991,6 | 816 |
| Karaganda ChB | 1 187 | 769,1 | 288 | 851,7 | 518 | 1018,5 | 877 |
| Kostanay PhM | 1 1 4 1 | 718,5 | 308 | 819,5 | 530 | 950,8 | 848 |
| Kyzylorda ChB | 1 163 | 659 | 270 | 783,8 | 487 | 965,9 | 876 |
| Uralsk PhM | 1172 | 728,5 | 366 | 825,1 | 551 | 1 012,7 | 899 |
| Ust-Kamenogorsk ChB | 1 232 | 743,7 | 339 | 837,6 | 532 | 965,1 | 776 |
| Pavlodar ChB | 1 200 | 741 | 337 | 833,4 | 500 | 986,6 | 878 |
| Petropavlovsk ChB | 1148 | 717,6 | 401 | 811,2 | 561 | 897,1 | 779 |
| Semey PhM | 1 203 | 744,3 | 392 | 855,7 | 499 | 985,2 | 858 |
| Taldykorgan PhM | 1 236 | 733,7 | 296 | 841,4 | 508 | 988,6 | 855 |
| Taraz PhM | 1 225 | 706,2 | 295 | 826,1 | 511 | 1045,5 | 907 |
| Shymkent PhM | 1 238 | 727,8 | 305 | 845,7 | 505 | 1080 | 988 |
| Shymkent ChB | 1 215 | 710,3 | 247 | 827,6 | 499 | 1074,7 | 975 |
| Total | 1 282 | 763,8 | 247 | 868,7 | 473 | 1 043,3 | 776 |

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The average score of candidates in the comprehensive test of competitive selection to Grade 7 in 2020 was 763.8 (59.6% of the maximum score).

In terms of the average score of candidates, Nur-Sultan is in the lead (882.7 and 872.7). The lowest average scores were registered in Kyzylorda (659). The difference between the highest and the lowest average score is 223.7.

Maximum scores across the subjects:

• in Mathematics (400) - 115 candidates (from Almaty and Nur-Sultan);

• in quantitative reasoning (300) – 3 candidates from Nur-Sultan and Almaty (PhM);

• in Kazakh as L1 (200) - 117 candidates (Nur-Sultan, Semey, Almaty (ChB), Taraz);

• in Kazakh as L2 (200) - 113 candidates in all the Intellectual schools except Kostanay, Petropavlovsk and Semey;

• in Russian as L1 (200) - 40 candidates from Nur-Sultan, Almaty (ChB);

• in Russian as L2 (200) - 88 candidates in all the Intellectual schools except Atyrau, Kostanay and Taldykorgan;

• in English, candidates with the Kazakh language of instruction (200) - 85 candidates from Nur-Sultan and Almaty;

• in English, applicants with the Russian language of instruction (200) – 135 candidates in all cities, except Kostanay, Ust-Kamenogorsk and Petropavlovsk



In 2020, the competitive selection to Grade 7 had the **following features**:

– in connection with the COVID-19 pandemic, in order to ensure the safety of the participants in the competitive selection, to comply with the sanitary standards changes were introduced to the procedure, the medical care for children was strengthened, the activities carried out before, during and after the competitive selection were agreed with the authorised bodies;

 when registering applicants in the Intellectual schools of Almaty and Nur-Sultan, the face recognition system was used in a test mode to ensure the security and transparency of the procedure. The successful piloting of the system made it possible to plan the full-fledged implementation for the next year;

 a number of procedures were conducted online, which required the development of additional materials (regulatory documents, information and explanatory resources, video instructions, etc.) to level out possible risks;

 initiatives were implemented to expand the opportunities of candidates to prepare for the competitive selection.

A working meeting with representatives of the Research Center for Examination and Certification (hereinafter – RCEC) was held in December as part of preparation for accreditation of the competitive students' selection system to Grades 7 of Nazarbayev Intellectual schools. Participants of the meeting considered the scope of RCEC activity, assessment systems and examinations accredited by RCEC, and were informed on the evidence-based methodology and criteria of accreditation. In addition, they worked through and discussed which accreditation criteria apply to particular competitive selection procedures. It should be noted that this working meeting was the starting point in preparation for accreditation of the competitive selection system, which is planned for 2021-2022.

PART 1

Also, additional enrollment of students for fee-based education in Grades 7-9, 11 of the Intellectual schools was carried out this year. A total of 89 students were enrolled in the 2020-2021 academic year.

Trial testing within the competitive selection of students to Grade 7

Trial testing is an annual procedure aimed at providing an opportunity for applicants to get acquainted with the format and conditions of the competitive selection to Grade 7. The testing is administered in the Intellectual schools as a computer-based test.



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A trial testing attended by 8 852 students was administered at the beginning of the year, but the procedures scheduled for December 2020 were canceled in relation to the current epidemiological situation.

Due to the high demand for trial testing in cities of national significance (Nur-Sultan, Almaty and Shymkent), the number of seats for candidates was increased.

The trial testing participants demonstrate significant progress: the more often applicants take part in the trial testing, the higher the average score in the real competitive selection.

Table. Comparative table of students' average scores in the trial testing in January and February, and in the competitive selection in March 2020

| | The average score of ap | plicants | : |
|---|-------------------------------|--|---|
| ir | n mathematics - 198.8 (max. | score - | 400) |
| did not take the trial testing | took the trial testing o | nce | took the trial testing several times |
| 183,6 [-15,2] | 214,2 [+15,4] | | 242,5 [+43,7] |
| in qua | ntitative reasoning - 159.3 (| max. sco | ore - 300) |
| 146,4 [-12,9] | 173,2 [+13,9] | | 195,2 [+35,9] |
| | in languages - 405.8 (max. s | score – 6 | 00) |
| 389,9 [-15,9] | 424,2 [+18,4] | | 448,4 [+42,6] |
| <section-header><section-header><text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text></section-header></section-header> | | The to a plan comp d admi scho T jointl to pro stude selec www T mate comp samp | trial testing allows applicants assess their current level and further work to prepare for the petitive selection. Online course "How to prepare for ssion to Nazarbayev Intellectual ols and assess own capabilities" The online course was developed y with Knowledge Engineering LLP ovide an alternative opportunity for ents to prepare for the competitive tion and is available on the website <i>n</i> . academia.kz. This course contains learning rials and tasks to consolidate the rial studied in all sections of the petitive selection test, and one ole for trial testing. |

WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

1.4. Virtual and vacation schools

To ensure access and equal rights of students of Grades 5 and 6 to prepare for the competitive selection to Grade 7, the Intellectual schools implement open access social projects of "Virtual School" and "Vacation School".

The Centre for Educational Programmes provides teaching and learning materials for distance learning in such subjects as Mathematics, Kazakh, Russian language and literature, English for students instructed in Kazakh, Mathematics, Russian, Kazakh language and literature and English for students instructed in Russian.

592 lessons were developed for Grades 5 and 6 (including 196 lessons for Grade 5 and 396 lessons for Grade 6). All materials were submitted to the Centre for Pedagogical Measurements and uploaded on the Virtual School Information System.

PART 1

Tasks for ongoing assessment and final testing in 'Mathematics', 'Kazakh language', 'Russian language' and 'English language' in terms of the Virtual School were developed and updated in 2020.

A number of documents were also updated: Virtual School Guidelines, a list of frequently asked questions and student questions to get feedback on the developed lessons.

Annual registration and training in the Virtual and Vacation runs according to the established schedule:

| Training | Grade 5 | Grade 6 |
|--|--------------------------------|---------------------------------------|
| Registration on the Virtual School website | March 30 - May 24, 2020 | October 30 - December 25, 2020 |
| Taking lessons and completing assignments of the Virtual School (online) | April – May (up to 5 weeks) | October - December (up to 8 weeks) |
| Final testing of the Virtual School (online) | May (7 days) | December (7 days) |
| Vacation School (in the Intellectual schools) | May/June (5 days) | December/January (5 days) |

The total of **1 384 Grade 5 students of general educational schools** registered and took part in the Virtual School (815 - in the Kazakh language, 530 - in the Russian language, 39 - in both languages), including **766 students** who attended NIS-based Vacation Schools (458 - in the Kazakh language, 308 - in the Russian language).

2 177 Grade 6 students of general educational schools registered and took part in the Virtual School (1 144 - in the Kazakh language, 900 - in the Russian language, 73 in both languages), including **783 students** who attended NIS-based Vacation Schools (382 - in the Kazakh language, 401 - in the Russian language).

Education in the Virtual and Vacation schools helps to increase the effectiveness of learning, develop the necessary skills and increase the chances of admission to the Nazarbayev Intellectual schools. In 2020, 1 732 students of the Virtual School took part in the competitive selection. Of them, 1 429 students were admitted to the consideration of the Republican Commission for awarding the educational grant "Orken" and 579 students won the grant.

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Diagram. Number of Virtual School students who took part in competitive selection 2020





TEACHERS



Teacher

process

selection

2.2

Qualitative composition 2.3

Professional development system 2.4

Pedagogical employees' performance appraisal



Teachers' achievements



In 2020, 2 863 teachers work in 20 Intellectual schools

2.1. Teacher selection process

In 2020, the recruitment of teaching staff of the Intellectual schools was carried out according to the updated methodology of open selection process and the formation of a candidates' pool for teachers and persons equated to them in the branches of Nazarbayev Intellectual Schools AEO. The main principles of the selection process:

• providing equal opportunities for everyone to take part in the selection process;

• ensuring fair competition among the candidates;

• monitoring observance of the validity, transparency and publicity of the selection;

• ensuring a collegial decision of the selection board.

After the selection announcement is published on the NIS website and social networks, candidates submit their CVs on the website to be registered and get into the candidates pool.

In the updated methodology, the selections procedures and assessment tools have been improved. Test specifications for 11 subjects were revised and approved, the bank of test items was optimised, 1 850 items were developed within the new framework. An automated statistical processing of test results has been introduced to ensure fairness of decision-making.

Competitive selection was carried out in 2 stages: **the first stage** - assessment of

academic subject knowledge through testing and assessment of methodological expertise and critical thinking skills through writing an essay; **the second stage** is an interview in one of the three languages – Kazakh, Russian or English – at the candidate's choice.

The first stage of the selection is implemented by the Centre for Pedagogical Measurements (hereinafter – CPM) at the same time in all the Intellectual schools with the use of the computer-based testing system on the TAO platform and online broadcasting.

Based on the results of the first stage, the CPM Examination Board provides individual feedback to the participants of the selection and the recommendations on areas for the development of subject and methodological knowledge. The analysis of the test results showed that teachers struggle with completing high school assignments and assignments of a high level of complexity (Olympiad tasks). The essay writing showed weak reflective writing skills, lack of methodological knowledge to develop students' research skills and organise the cognitive process with reference to individual characteristics of students. In 2020, the first stage of the selection process was conducted 4 times to involve 1471 teachers, 445 teachers (30%) received the threshold score and were admitted to the second stage.

The second stage – interviews with candidates were conducted by the competition committees of the Intellectual schools. By the

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decision of the competition committee, the candidate is recruited or recommended for including into the candidates' pool.

In 2020 137 teachers were recruited with different levels of qualification, including 55 teachers-interns, 79 teachers, **2** teachers-moderators, and **1** teacher-expert.

Of the total number of teachers recruited, 53 have master's degrees, 3 are PhDs and 1 is a candidate of sciences. The total number of workers recruited include 17 graduates of the Nazarbayev University and 4 graduates of the Bolashak programme. 4 candidates with no pedagogical experience were recruited as teachers-interns and since they comply with qualification requirements they were awarded the qualification of teacher without the certification procedure.

2 teachers were recruited without the selection process: biology teacher with a PhD degree to the position of teacher-expert and English teacher to the position of teacher-moderator.

International teachers

As of December 1, 2020, 131 international teachers work in the Intellectual schools, which is 4.5% of the total number of teachers as compared to 2019 – 169 international teachers (6% of the total number of teachers). The work on attracting international teachers is carried out in terms of the long-lasting partnership with two recruiting companies. In the reporting period, the documents of candidates were analysed and interviews carried out, but due to the restrictions on crossing the border, 1 foreign teacher was recruited to the Intellectual schools. The contract with 115 international

teachers has been extended.

Of the 131 international teachers, 16 (12%) work in the Intellectual school of International Baccalaureate and 6-7 teachers in each of the 19 Intellectual schools implementing the NIS-Programme.

During the period of distance learning, international teachers worked online both in Kazakhstan and abroad. September to December 2020, 13 international teachers conducted lessons online from their home countries in accordance with the subject programme and lesson schedule.

62% of international teaching staff are subject teachers (82). 28 Physics teachers (21%), 23 Chemistry teachers (17%), 16 Biology teachers (12%), 15 Computer Science teachers (11%). 8 (6%) Mathematics teachers and 11 (8%) English teachers, in cooperation with a team of Kazakhstani teachers, conduct elective courses to prepare students for international examinations SAT, IELTS, and carry out team teaching in project-based learning (GPPW).

Of international teachers, there are 5 PhDs (2 in Physics, 1 in Mathematics, 1 in Economics, 1 in Geography), 46 have Master's degrees, 28 have International IBDP, TESOL, ESL, TEFL certificates and certificates of IELTS, CELTA, DELTA language test administrator.

In 2020, students of Intellectual Schools studied a second foreign language of their choice through elective courses (German, French, Chinese, Korean, Japanese). Local teachers who have both teaching experience, language certificates and appropriate foreign education (graduates of scholarship programmes) are also involved in teaching a second foreign language.

Geography of international teaching staff includes 31 countries:



PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

2.2. Qualitative composition

NIS IT and Service Centre developed a technical specification and implemented personnel accounting system 1C-ZUP aimed to automate HR management processes: movement of employees associated with documenting the recruitment, movement and dismissal of employees, labour relations with employees and the organisation of labour, employees' performance appraisal, candidates pool, selection of teaching staff.

As part of the system implementation, a training seminar was held for 34 employees of the Nazarbayev Intellectual Schools AEO, including 32 employees of HR management department and 2 employees of the NIS IT and Service Centre.

The introduction of the personnel accounting system contributed to faster approval of HR management processes and their documentation over the network. To date, inspectors of NIS HR department have more than 7 500 electronic documents in the system, including documents for recruitment/ movement of employees, annual and social vacations, etc.

This system is configured for integration with the electronic document management system, which will help to abandon paper versions of documents in the future.

Age composition of teachers

According to the age composition of teachers in 2020, the share of teachers under 40 amounts to 65%

| (across 20 Intellectual Schools) | | | | | | | | |
|----------------------------------|-----------|-----------|-----------|--|--|--|--|--|
| Age group | 2018 | 2019 | 2020 | | | | | |
| under 30 | 904 (34%) | 756 (28%) | 784 (29%) | | | | | |
| 31 to 40 | 865 (32%) | 975 (36%) | 990 (36%) | | | | | |
| 41 to 50 | 524 (19%) | 550 (20%) | 542 (20%) | | | | | |
| 51 and elder | 411 (15%) | 448 (16%) | 416 (15%) | | | | | |
| TOTAL | 2704 | 2729 | 2732 | | | | | |



Work experience of teachers

In the Intellectual schools, teachers with up to 20 years of experience predominate in terms of teaching experience. Their share is 73% of the total number.

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(across 20 Intellectual Schools)

Work experience of teachers



Gender composition

The quantitative ratio of female and male teachers remains unchanged.

| Gender composition | 2018 | % | 2019 | % | 2020 | % |
|--------------------|------|------|------|------|------|------|
| female | 2009 | 74% | 1981 | 73% | 2004 | 73% |
| male | 695 | 26% | 748 | 27% | 728 | 27% |
| Total | 2704 | 100% | 2729 | 100% | 2732 | 100% |

Academic degree holders' rate

1028 teachers with academic Master's degrees work in 20 Intellectual schools, which is 38% of the total number of teachers. 40% of the them are subject teachers such as Mathematics, Physics, Chemistry, Biology,

Computer science, Global Perspectives and Project Work. In terms of subjects, the majority of academic degree holders are among English language teachers (206), which is 20% of the total number of Master's degree holders.

Number of teachers with Master's degree by subjects



18 candidates of sciences and 12 PhDs work in 20 Intellectual schools, which account for 1% (30) of the total number of teachers.



PhD/Candidates of science by subjects

Teaching excellence of teachers and leaders of 20 Intellectual schools

In terms of teaching excellence, there is an increase in the number of teachers-moderators by 1.9%, teachers-experts by 24.9% and, accordingly, a decrease in the number of teachers by 1.5%, and teachers-interns by 23.1%.

| year | number of schools | number of teachers | intern | teacher | moderator | expert | researcher | master |
|------|-------------------------|-----------------------|--------|---------|-----------|--------|------------|--------|
| 2018 | 20 | 2870 | 445 | 1 096 | 1 058 | 265 | 6 | |
| 2019 | 20 | 2800 | 381 | 924 | 1172 | 317 | 5 | 1 |
| 2020 | 20 | 2799 | 293 | 910 | 1194 | 396 | 5 | 1 |



Teaching excellence

2.3. PROFESSIONAL DEVELOPMENT SYSTEM

In accordance with the Law of the Republic of Kazakhstan No. 188-V "On Civil Protection" dated April 11, 2014, teachers and laboratory assistants in Chemistry and Biology are annually trained on industrial safety (circulation, storage and use of precursors). In the reporting period, 480 teachers and laboratory assistants were trained and certified.

Following the requirements of International Baccalaureate, 24 teachers of NIS IB in Nur-Sultan attended courses on IB Diploma Programme.

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| Training teachers of NIS IB in Nur-Sultan | | | | |
|---|--|--|--|--|
| 1 | Economics for IB Diploma Programme Category 2 | | | |
| 2 | Theory of knowledge Category 2 | | | |
| З | The role of the supervisor in extended essays Category 3 | | | |
| 4 | Mathematics Analysis and approaches for IB Diploma Programme Category 2 | | | |
| 5 | Mathematics Applications and interpretations for IB Diploma Programme Category 2 | | | |
| 6 | CAS Category 2 | | | |

To ensure highly qualified medical care, 11 employees of the Intellectual schools took part in the following training courses:

• "General nursing technologies/Nutritional therapy" for registered and nutrition nurses;

• "Medical rehabilitation: physical therapy" for pediatricians.

To organise the labour of employees in accordance with the amendments to the Labour legislation of the Republic of Kazakhstan, Conciliation Committees on employee-employer relationships conducted courses for Intellectual school leaders, lawyers, HR Departments inspectors and Conciliation Committee members.

| | Training of lawyers, inspectors of HR Departments | Number of participants |
|---|--|---------------------------|
| 1 | "Novelties of the Labor Code of the Republic of Kazakhstan. Digitization of labour relations. Amendments to the subordinate legislation" | 20 |
| 2 | "Legislative regulation of labour relations in the Republic of Kazakhstan" | 40 |
| 3 | Course "Labor legislation of the Republic of Kazakhstan. Work of the Conciliation Committee" | 160 |

53 psychologists of the Intellectual schools completed courses on "Separation complex" INTENSIVE 2 aimed at further development of work with parents.

Nazarbayev University organised a course to develop management skills of the Intellectual school directors and deputy directors.

| Leadership training | | Number of participants | |
|---------------------|--|---------------------------|--|
| 1 | "Strategic risk management", "Risk management and internal control in education" | 4 | |
| 2 | "Data Analytics Basics for Executives" | 39 | |

Nazarbayev Intellectual school of Chemistry and Biology in Shymkent jointly with

SHELL delivered training on the development of project skills and activities of students.

| | Teacher training | Number of participants |
|---|---|---------------------------|
| 1 | SHELL course for GPPW teachers | 74 |
| 2 | "Greenhouse facility" in NIS ChB Shymkent for 2 employees of NIS ChB Aktau | 2 |

The following ICT competence courses aimed to support teachers in implementing distance learning:

In February, 2020, it delivered an advanced training course online under the Dassault Systems programme "Certified SOLIDWORKS Associate" for NIS teachers of Computer Science and Robotics. The number of participants was 42.

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As part of the NIS-Engineering project, an agreement was concluded between NIS and the French company Dassault Systems on the provision of "Solidworks" 3D modelling software. In addition to software, Dassault Systems provided an opportunity for NIS teachers to complete online training and receive a Certified SOLIDWORKS Associate (CSWA) certificate for free.

29 NIS staff members completed the course "Training teachers to solve World Robot Olympiad 2020 problems". The free course was delivered in collaboration with the University of Innopolis.

An online training for all employees of NIS and its branches on "Security at remote work. Passwords and accounts" in cooperation with Kaspersky Automated Security Awareness Platform. 98 employees of the Central Office; 97 employees of the centres and 310 employees of the Intellectual schools were trained.

In cooperation with the Silicon Valley Innovation Center LLC, 19 employees of the Central Office were trained on "Digital transformation: strategy and practice". The training was carried out as part of the development of the concept of the NIS activity redesign with the use of modern information technology.

An online course for 1854 teachers on the use of Microsoft Office 365 tools.

In 2020, Centre of Excellence (hereinafter – CoE) continued to conduct training courses for NIS teachers according to the following programmes:

Professional development programme for training deputy directors for pastoral work.

In accordance with the order of Nazarbayev Intellectual Schools AEO No. 71/OD dated March 5, 2020, in the period from August 17 to 21, 2020, the courses were attended by 20 deputy directors for pastoral work with the aim to increase professional competence in pedagogical management.

A special feature of the courses in 2020 was distance learning on the MS Teams electronic platform due to the nation-wide epidemiological situation. The MS Teams platform and One Note app allowed the trainer to conduct webinars in a synchronous format, organise pair, group and class discussions, post training materials and tasks for daily independent work, share recorded webinars and written feedback.

During the courses, school leaders expanded their understanding of modern approaches to the development of pastoral work, got acquainted with the peculiarities of modern school culture, current methods of managing the school and school collective, studied the methods of assessing pastoral work, and designed implementation of personal ideas in the management of pastoral work in NIS.

In addition, they discussed the structure of personal development map, analysed the conceptual foundations of "4D education", humanist, activity-based, student-centreed education drawing on NIS development strategy.

The participants had the opportunity to reflect on their own experience and consider approaches to changing the school culture in order to develop value-based pastoral work. The teachers noted that new knowledge can contribute to subsequent changes in pastoral work in NIS, as it qualitatively impacts the leaders' management.

Having analysed group and individual tasks and participants' feedback, the trainer identified the course strenghts and teachers' weaknesses:

Strengths:

 course participants were very active and were able to flexibly integrate previous knowledge and skills;

 they made a conclusion about the integration of 'soft' and 'hard' skills in work;

 recommendations and instructions were developed for teachers, curators, organisers in order to support the development of individual student development sheet;

 the role of deputy directors for pastoral work in the formation of school culture was determined, which has a positive impact on learning, teaching and instilling values;

 the idea of integrating research methods in action research and lesson study caused the greatest interest in improving the pastoral work;

 in terms of the pastoral work management, the high-quality organisation and implementation of planning tasks is

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confirmed, however, there is a need to improve assessment.

The teachers expressed a wish for CoE to organise additional activities to study the techniques:

integration of research into the pastoral work,

 building the pastoral work on the values and evaluation in the management of the educational process.

Educational programme of the schoolbased professional development course "Research in teacher practice"

In accordance with the order of Nazarbayev Intellectual Schools AEO No. 244/OD dated July 4, 2019, in the period from August 26, 2019 to October 23, 2020, 300 NIS teachers (15 teachers from 20 schools) attended CoE courses. It was a mixed course of classroom and distance learning.

Purpose of the course: to develop research skills of NIS leader teachers required to implement the school-based teacher professional development programme.

Stages of the course:

1st stage - pre-course stage, focused at determining the research topic and the research group members;

2nd stage - classroom stage, focused at designing the implementation plans in the research group, and outlining the role of the teacher-researcher (school trainer);

3rd stage – intercourse, practical stage, included three webinars on action research to provide teachers with methodological support;

4rd stage - distance learning. At this stage, a special team of course participants was created on MS Teams platform. MS Teams educational platform and One Note application allowed the course trainers to conduct simultaneous webinars, organise pair, group and class discussions, share training materials

and assignments for daily independent work of course participants, share recorded webinars, and provide written feedback.

During the courses, having analysed the completed group and individual tasks, the participants' feedback, the following points were identified:

 the participants are highly motivated to understand the role of research in teaching practice and to integrate it into their own experience to improve teaching and learning;

 participants use lesson research mostly as a management and evaluation tool for action research. In doing so, it is necessary to use lesson study to design "better" lesson plans;

 participants identify problems in teaching and learning and face challenges in substantiating them with data.

During the course, topics for further methodological support of teachers were identified:

 defining and using methods for assessing the impact of changes in action research.

data processing, analysis and interpretation;

In the period October 1-2, 2020, after completing the course, the course participants took part in the CoE regional conference "Lesson Study Fest 2020".

Educational programmes "Development of mathematical and reading literacy, creative thinking of schoolchildren", "Development of scientific and reading literacy, creative thinking of schoolchildren"

In accordance with the order of "Nazarbayev Intellectual Schools" AEO No. 73/OD dated March 6, 2020, 1194 teachers, including 376 mathematics teachers and 818 science teachers attended CoE courses on MS Teams electronic platform in four flows:

Number of teachers by subjects



- Mathematics
- Physics
- Chemistry
- Biology
- Geography
- Computer Science

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The course programme consisted of five modules, including review lectures, presentation of theoretical material and practical tasks for consolidation.

During the courses, teachers:

- learned to plan lessons using examples of assignments from international studies of previous years on the development of functional literacy and creative thinking as well as independently developed assignments;

- studied approaches and methods that contribute to the development of mathematical/ scientific and reading literacy, creative thinking of schoolchildren;

 got acquainted with methodological recommendations of Altynsarin National Academy of Education and the experience of international schools in the development of functional literacy of schoolchildren.

Modular course "Development of professional competence of Nazarbayev Intellectual Schools teachers"

In accordance with the order of the Schools" "Nazarbayev Intellectual AEO No. 206/0D dated October 1, 2020, CoE trainers conducted a modular course on the "Development of teachers" professional competence attended by 250 teachers.

The training took place online in the period October 5 - November 3, 2020, with the use of MS Teams electronic platform. The course consisted of four modules with a duration of 50 study hours.

Content of the course programmes, in academic hours



During the courses, teachers improved the skills of effective planning of the teaching process, developed the skills of developing and applying differentiated assignments for gifted students, learned how to plan and conduct project-based research work with gifted students, and expanded professional opportunities through the development of a network community.

- Directing a lesson
- Differentiation of learning
- Organisation of design and research work with gifted students
- Technology in teaching

Teacher training workshops and seminars In 2020, traditional subject trainings were delivered online in the format of webinars as part of the NIS August Conference.

In total, 30 trainings were held, and 1983 teachers were trained (1964 teachers attended webinars and 19 NIS Mathematics teachers attended a training) (Figure 4).



Figure 4. Number of trainings delivered in 2020



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Mathematics teachers considered probability and statistics discussing such topics as "Bernoulli trial". They completed tasks using normal distribution tables and Poisson's law, "Methodological aspects of determining the probability of random events, defining key concepts and probability formulas", "Major objectives of mathematical statistics. Constructing point and interval estimates of the normal distribution".

Considering that the next cycle of PISA study is scheduled for 2022, the focus of subject teachers training was the development of student's functional literacy in primary, secondary and high school.

Language teachers training on the "Development of reading literacy in a digital environment" reviewed academic performance of NIS students in PISA-2018. Teachers were given recommendations on how to develop students' reading skills: by working with electronic texts; hypertexts; understanding texts that contain conflicting information; extracting information from several sources, etc. Teachers identified how the learning objectives focused at developing student's reading literacy are implemented in the curriculum and designed tasks in accordance with the learning objectives.

Webinars for Science and Mathematics teachers focused on the development of students' mathematical and scientific literacy. Trainers explained the PISA structure and different tasks to evaluate students' competencies and advised on how to design and apply integrated tasks and methodological guidelines for conducting laboratory and practical works in the distance learning.

Societal and liberal arts teachers discussed topical teaching issues, in particular, strategies and approaches to developing research and writing skills, ways of implementing historical concepts and motivating students. Training discussions were based on the presentations including theoretical materials, practical conclusions and recommendations following the monitoring results.

Teacher training programmes included explanations and recommendations on how to organise distance and personalised learning and provided references to free resources and you-tube channels.

Activities **to develop teachers' research** skills were aimed at improving the quality of teaching and reflective practice. Teaching staff determine the professional development objectives for the academic year based on the analysis of teaching practice, analytical reports on external assessment, international accreditation reports. They use such tools as Lesson Study, Action Research, and HertsCam. Results of lesson study and action research were discussed at the school level in poster session format and presented at regional teacher conferences.

At the network level, journal "Mugalimzertteushi" (Teacher-researcher) is published annually to share the results of lesson studies and action research conducted by NIS teachers. This year it included 90 articles in Kazakh, Russian and English on the results of research projects.

It is important to note that there are research projects carried out by teachers of different subjects, by language and subject teachers, as well as joint projects of teachers from different schools.

The research topics and areas chosen by teachers include: methodological techniques that contribute to improving the quality of education; strategies to support students' research skills development; differentiated teaching and assessment; the use of content and language integrated learning; professional burnout and its impact on the teacher well-being.

Examples of research topics:

- "Development of students' research skills on mathematics lessons through the use of differentiated tasks";

"Teacher is the driving force in the development of students' research skills";

 "How does the use of the problembased exploratory method contribute to the development of students' research skills?";

 "Methodical approaches to the formation of argumentative writing skills of high school students";

 "Use of CLIL for the development of students' academic speaking skills on physics lessons in high school";

 "The effect of physical activities on divergent thinking of middle year school students"; "Development of academic honesty in the Nazarbayev Intellectual school in Semey."

The journal acts as a discussion platform for discussing professional topics and contributes to the development of NIS teacher network.



In the reporting period, 15 NIS teachers from Uralsk, Kokshetau and Aktau presented their research results at the international level.

On December 2-4, 2020, teachers took part in the World Association of Lesson Studies (WALS) conference online.

• The research of the Intellectual school in Uralsk was presented at the conference by three reports. Research *"To what extend is Lesson Study effective in developing 7th graders argumentation skills?"* done by S. Khairullina, S. Brekeyeva, S. Bakhytzhanova and Zh. Kulbekova was aimed at integrating subject knowledge in Russian language and literature, English and Art in Grade 7, learning how to develop argumentation skills in three languages;

• Research project "How to develop students' research skills in conditions of distance learning?" (O. Kdirshayev, O. Oprya, S. Bakytzhanova S. Irgaliyev, O. Panina, A. Kazbekova, R. Kazhenov) was aimed at creating tools for the development of research skills in the context of distance learning and students' personal growth trajectory.

• Lesson study of A. Zhassybayeva "How can feedback improve the achievements of Year 10 students in English lessons?" looked at the role of feedback in classroom, which feedback forms are most effective, whose feedback is more important and how it can be improved. The results showed that students preferred written recommendations and that consistent teacher feedback improved their performance.

• "Personalisation that leads to equity. Equitable reality through Singularity" of Nazym Tabarak, the teacher of the Intellectual school in Kokshetau, explored the research question based-learning method, with the aim to implement the concept of "Singularity" in the English language lessons to contribute to students' intellectual engagement in the learning process.

• Questions of how the participation of school teachers in Lesson Study can contribute to solving issues that teachers face in the context of distance learning and how the school administration can help teachers apply effective methods of team planning were considered by B. Abdrakhmanova, who shared the experience of teachers of NIS in Kokshetau in the research study "How can conducting Lesson Study contribute to solving the problems teachers face during distance learning?".

The lesson study of Sh. Sherubayeva on "How to develop learners' argumentative essay writing skills", Russian language and literature teacher of NIS in Aktau, raised questions of how to develop the skills of writing detailed answer in 11 graders, how to learn to find necessary information from different sources, what methods, strategies and forms of work will be most effective in developing these skills. The relevance of the research topic was due to the challenges faced by the students in terms of the external final assessment.

The results of the presented studies have shown the practical value of developing the research culture for improving the teacher's practice, changing it in view of the data of research projects.

NIS traditionally holds the annual August conference of teachers – an inclusive event to ensure professional interaction of pedagogical community of the Intellectual schools network. The theme of the 2020 conference was 36

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"Learning will not be the same: new challenges for education". MS Teams allowed all NIS teaching staff and guests (3500 people) to attend the conference online. Plenary session, panel discussions, open and closed sessions were live broadcasted. Conference materials are published on the website conferences.nis. edu.kz.

The Chairperson of the Nazarbayev Intellectual Schools Board delivered a keynote speech on the new realities and new opportunities of modern education. Plenary session raised the issues related to peculiarities of the organisation and implementation of learning and engagement, support for students' well-being in the context of distance learning. Professional case presented by Peeter Mehisto, a member of the NIS Board of Trustees, "Teaching Together", aroused great interest of the conference participants.

At "Distance learning – new norms" session the following priority areas of the agenda were discussed: research and methodological support of teachers; medical, sanitary and psychological support of students; group interaction in the context of distance learning.

It is logical that online survey "Let's discuss: digital etiquette of the teacher" was conducted during the first online conference and a code of ethics of the teacher in digital space was discussed.

Thematic sessions of the online conference have become effective lessons in professional skills development. Subject teachers have expanded their knowledge in personalised learning, assessment tools development, teacher-parent collaboration, creating a supportive and safe school environment, and other relevant topics.

The annual competition "Panorama of Successful Practices" has already become traditional and was held in the format of cases from the experience of NIS teachers in nominations such as "Innovative case"; "Relevance-based case"; "Evidence-based case". There were following additional nominations: "Mobile activity" for student engagement, "Online simulator" for skills development, "Digital visualisation" for visualisation of educational material, "Remote formatting" for perception management, "Cloud study" for the development of research and project skills.

110 cases were discussed in total: 18 – NIS PhM, Taldykorgan, 11 – NIS PhM, Uralsk, and 10 – NIS PhM, Kokshetau.

As a result of online voting, the practices of the following teachers were recognised to be the most successful: Mathematics teacher Mukhtar Begaydarov "Using the capabilities of nismath.org in distance learning", (Kyzylorda), Physics teacher Nursultan Zhakupov "Using CLIL techniques to increase the terminological vocabulary of students using online tools" (Pavlodar), Chemistry teacher Kunsulu Serikova "Development of the academic language of students through the use of online services Quizlet and Padlet" (Kokshetau).



Mukhtar Begaydarov

Nursultan Zhakupov

Kunsulu Serikova
In "Innovative case" nomination – Computer Science teacher Natalia Kim, "CLIL in distance learning" (Taldykorgan);

"Relevance-based case" – teachers of the Russian language and literature Elmira Ungaraliyeva and Taigan Salmenova, "Peculiarities of using the method of independent learning (technology of creative workshops) in the Russian language and literature lessons (L2) in Grade 10 with the use of Microsoft Teams platform", (Uralsk);

"Evidence-based case" – Kazakh language teachers Ayim Kamyrova and Zhanar Kanafina "Using the capabilities of Lening.aps and flippity.net platforms to learn LGM in L2 classroom (Petropavlovsk).

The cases of the following teachers won in additional nominations:

"Mobile activity" - to engage students in the distance learning process - Zhanibek Shaldarbekov, Computer Science teacher (NIS PhM Shymkent) with the case "Organisation of students' group (paired) work using the capabilities of Google Drive";

"Online simulator" – to develop skills required for distance learning – Ramazan Sultan, Mathematics teacher of NIS PhM in Almaty, "Gamification of the lesson through the use of the codeforces.com system";

"Digital visualisation" – visualisation of learning material used in distance learning; Nurzhan Bayburov, Geography teacher of NIS Ust-Kamenogorsk led this nomination, "Ways to draw electronic maps in geography";

"Distance formative assessment" - to control the level of students' perception and acquisition of the material - Tuimegul Ubisheva, Biology teacher, NIS Taraz "Using digital tools in biology lessons: Phet, Learningapp and Google Forms";

"Cloud Research" - to develop research and project skills in the context of distance learning; Boris Zelenov, Computer science teacher of NIS Uralsk "Development of real life processes automation skills in computer science lessons within the framework of NIS Programme."

Cases on professional interaction of teachers at the school and network levels were presented at the competition in the following nominations "Peer-to-peer – online" and "Author's project".

By online voting participants singled out the case "Training teachers to apply CLIL approach with the help of an online resource", which describes an online CLIL simulator on Stepik platform proposed by a group of teachers from NIS Uralsk: Asel Sakhiyeva, Baktygul Segizbayeva, Aliya Sergaliyeva, Ainur Lukpanulinova, Boris Zelenov.

Lyubov Issatayeva, teacher-expert of History, NIS Taraz, became the winner with a case on the authorial programme of elective course "Historical and cultural local history of Zhambyl region".

With the aim of providing methodological support for professional development of teachers and trainers:

1. A discussion platform on "Development of teacher practice in the context of distance learning" was organised at the August meeting, 10 videos of best practice examples were presented;

2. 11 teachers were trained and certified as trainers on "Teaching gifted children in school" programme, and 60 teachers-trainers to support the professional development of teachers;

3. The practice of 80 trainers on "Teaching gifted children in school" programme and 150 trainers to support professional development was observed; group consultations were held to identify the needs of trainers, plans/videos of training events, lesson observation forms were analysed; trainers were provided with individual reviews with recommendations;

4.4 webinars were held to train 520 teachers on goal setting in professional development, lesson observation, use of differentiation in distance learning environment, writing reflective lesson reports depending on the level of professional qualification of teacher.

For the first time the course on "Managing the development of own practice" was implemented on the distance learning platform, 200 teachers were trained.



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2.4. PEDAGOGICAL EMPLOYEES' PERFOR-MANCE APPRAISAL

In the reporting period, 521 employees took part in the appraisal (attestation), including 406 teachers and 115 persons equated to teaching staff.

According to the results of the first stage - school-based evaluation - of 406 teachers, 392 were recommended (96.5%), and 14 were not recommended (3.5%) for the claimed degree of pedagogical excellence.

In the second stage (independent evaluation), 406 reflective reports were submitted to the **Centre for Pedagogical Measurements**, of which 195 (48%) received passing scores.

406 teachers took part in the final third stage, of which 345 (85%) were recommended, and 61 (15%) were not recommended.

Teacher qualification was assigned to 52 interns without the attestation procedure, including 4 recruited in 2020 and 48 who had worked as interns. 30 of them are NU graduates, 2 Bolashak programme graduates, 15 graduates of Master's programmes of Kazakhstani HEIs with IELTS band score 5.0 and higher. They are 13 Mathematics teachers, 11 Chemistry teachers and 6 Physics teachers.

As compared to 2019, the number of teachers who applied for performance appraisal ahead of schedule increased by 18.5% for teacher-moderator degree, by 15.3% for teacher-expert degree. All teachers who applied for "teacher-researcher" degree did it ahead of schedule. The share of teachers who applied for expert degree and higher increased by 40%.

At the stage of independent evaluation, teachers submitted reflective lesson reports, which include:

• analysis of planning, teaching, assessment of students' learning achievements judging from pedagogical experience;

 assessment of the lesson effectiveness based on the analysis of planning, teaching, assessment of students' learning achievements;

• forecasting changes in the teacher's activities based on the findings.

The successful completion of the reflective report confirms the degree of the teacher's understanding of own practice to achieve the goal of professional development. The result of reflective report evaluation shows the achieved level of professional excellence and determines the further pedagogical development goals.

406 reflective reports were submitted for independent evaluation by teachers who applied for qualification degrees 'teacher' - 'teacher-researcher'. They were uploaded to the CPM portal and encoded to ensure confidentiality, then checked by plagiarism detector programmes "CodEx" and "eTXT" and evaluated by independent experts.

Based on the results of the second stage, 195 teachers received the score required for the claimed degree, including 61 teachers who applied for the position of 'teacher', with 29 reflective reports written in Kazakh, 20 - in Russian, 12 - in English; 92 teachers who applied for the position of 'teachermoderator' (41 - in Kazakh, 39 - in Russian, 12 - in English); 42 teachers who applied for the position of 'teacher-expert' (19 - in Kazakh, 21 - in Russian, 2 - in English).

Reflective reports of teachers of the following Intellectual schools received the maximum scores:

 "teacher" qualification degree - one teacher from each of the Intellectual schools IB Nur-Sultan, ChB Aktau, ChB Almaty, ChB Shymkent;

"teacher-moderator" qualification
 degree - one teacher from each of the
 Intellectual schools IB Nur-Sultan, PhM Almaty,
 PhM Nur-Sultan, Kostanay, Taldykorgan, Taraz,
 Uralsk. 2 teachers from ChB Aktau;

 with scores above the threshold level for teacher-expert degree - 7 teachers from PhM Taraz, 4 from Nur-Sultan, 3 from each of NIS Kokshetau and Taldykorgan, 2 from Aktobe, one teacher from PhM Almaty, Kyzylorda, Pavlodar, Petropavlovsk.

Based on the results of reflective lesson reports evaluation, teachers were provided with individual evaluation sheets with feedback. According to the analysis of the independent evaluation results, the Intellectual schools were provided with a report with conclusions and recommendations by qualification degrees to inform teacher professional development plans.

In connection with epidemiological situation, the final stage of attestation was carried out online.

In accordance with the order of the Chairperson of the Board No. 119 dated May 13, 2020, and the Instructions for holding meetings of the NIS attestation committee taking into account the sanitary requirements, the working groups organised the work of the attestation committees of schools and NIS AEO, providing opportunities for teachers and persons equated to them to participate in attestation both from school and from home.

At the final stage of attestation, having

studied the documents of the employee: the results of the 1st stage (school-based evaluation) and 2nd stage (independent evaluation); results of "The teacher through the eyes of students", "The teacher through the eyes of parents", "The teacher through the eyes of colleagues", and teacher's portfolio, the NIS AEO committee listened to the employee's presentation.

The presentation was evaluated according to the Presentation requirements and Evaluation Scale. When assessing the employee's presentation according to the Grading Scale, the members of the NIS attestation committee give marks based on the assessment criteria for the claimed qualification degree drawing on the evidence provided.

To ensure there is necessary evidence, deputy directors for development, members of the working groups developed recommendations on the list of evidence and selection of materials for the electronic portfolio.

In accordance with the decision-making procedure, the NIS attestation committee summed up the results of teachers' performance appraisal.

The work was carried out with the use of MS TEAMS. Therefore, with support of schools, training was conducted for deputy directors for development on the work and the format for uploading teachers' portfolios to the platform. This format demonstrated the possibilities of working with electronic portfolios of teachers online.

Post-attestation surveys conducted in Intellectual schools in order to determine the level of satisfaction with the attestation process, provided evidence of a high level of support for teachers during the performance appraisal.

2.5. Teachers' achievements

Network contest "Teacher of the year" took place in February 2020. 20 winners of school competitions in teaching excellence took part in the contest. The participants demonstrated their professional competencies by demonstrating fragments of lessons, solving pedagogical cases, shared their ideas in public speaking competition and business

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card presentation "I am a person, I am a teacher". An exhibition, where teachers presented banners and shared innovative methodological ideas attracted great interest of the participants.



Dina Beisembayeva, Chemistry teacher of IB school in Nur-Sultan won the Grand Prix.

Kamila Rakhymzhanova, English teacher of NIS Semey won the 1st place. Dina Kudabayeva, Physics teacher of NIS Petropavlovsk won the 2nd place, and Mirat Ospanov, teacher of NIS Aktobe was awarded the 3rd place.



Subsequently, the winners of the network contest honourably represented the Intellectual schools in the national professional teacher contests.

According to the results of the professional teacher contest organised by the Ministry of Education and Science, Mirat Ospanov, Physics teacher of Nazarbayev Intellectual school in Aktobe and Dana Baidildinova, teacher-expert of the Kazakh language and literature in NIS ChB Almaty were awarded the title of the "Best Teacher 2020". In addition to the high rank, the teachers were awarded a certificate for 2 778 000 tenge (1000 MCI). On the eve of the Teacher's Day, the Heads of Departments and Akimats arranged celebrations in honour of teachers.



In November 2020, two teachers of Intellectual schools, Dina Beisembaeva, teacherexpert of Chemistry at IB school in Nur-Sultan and Dina Kudabayeva, teacher-moderator of Physics at Nazarbayev Intellectual school in Petropavlovsk, took part in the National Award "Teacher of Kazakhstan 2020", organised by the Foundation for Socially Significant Initiatives in order to select the best candidates to take part in Global Teacher Award – an analogue of the Nobel Prize for teachers. Both teachers entered the "Top-10 KZ" nomination and became the Ambassadors of the Global Teacher Award. Dina PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

Kudabayeva became a laureate of the contest, Dinara Beisembayeva won the National Award "Teacher of Kazakhstan 2020" and a cash prize of four million tenge.

The National Award "Teacher of Kazakhstan 2020" was held for the second time within the framework of the Global Teacher Award. Almaty was chosen as the venue for the event. Kazakhstan has taken part in the event since 2019. More than 200 applications have been submitted this year. The selection of nominees was carried out according to the criteria of the Varkey Foundation – the holder of the Global Award.



Following the main principle of the national award – serving society – Dinara provides methodological assistance to a rural school in the Nura district of the Karaganda region. As the author of the elective course – Digital Science at Home – she shares her experience with teachers of chemistry and biology. She spent a part of her prize to purchase laboratory equipment for the chemistry classroom. The ambassador is active in social networks and created the group of Chemistry Teachers on Facebook. It already has more than 160 teachers from different parts of Kazakhstan and is used as a platform for disseminating the best teacher practices.



Dina Kudabayeva continued her volunteer work started several years ago and initiated opening of the first regional Zhurek Zhyluy office in the Digital Urpaq schoolchildren's palace in Petropavlovsk. The development centre is designed for children with Down syndrome, delayed speech development, and impaired functions of the musculoskeletal system. The centre hosts sessions for parents, psychological consultations, Stellarium demonstrations, and interactive cognitive classes in astronomy. The Ambassador's initiative was supported by Bilim Media Group.

In support of the Ambassador's ideas, the staff of Nazarbayev Intellectual schools AEO raised funds to purchase necessary educational equipment and furniture.

In 2020, 253 teachers took part in various national professional competitions and won prizes.

5 teachers became winners of the national contest "The best Daryn programme" organised by the Ministry of Education and Science out of 14 candidates. Aisulu Yeshmanova, ChB NIS teacher from Shymkent, Inessiya Kim, PhM NIS teacher from Shymkent, Gulzhan Utebayeva, PhM NIS teacher from Aktobe were awarded with the 1st degree diploma; Meyramgul Kenzhekhanova, PhM NIS teacher from Nur-Sultan received the 2nd degree diploma; and

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Akbope Zhamankulova, ChB NIS teacher from Shymkent - the 3rd degree diploma.

On January 8 - 14, 2020, NIS organised the International Creative Contest in Mathematics, Physics and Computer Science with the support of the Ministry of Education and Science of the Republic of Kazakhstan, Daryn Republican Scientific and Practice Centre, International Information Technology University, Republican Physics and Mathematics School. 150 teachers and Olympic reserve trainers from Kazakhstan, Russia, Tajikistan, Kyrgyzstan, Georgia, Serbia and Uzbekistan took part in the contest, including 70 mathematics teachers, 50 physics teachers, and 30 computer science teachers.

The teachers of mathematics, physics and computer science from NIS PhM Almaty took the 1st place in the team competition.



Teachers of NIS PhM Almaty - Aybyn Sadi, mathematics teacher, and Boris Krongart, physics teacher - won the 1st places in individual competitions.





Kaldarkhan Dzumadillayev, physics teacher, and Darkhan Ardakuly, mathematics teacher won the 2nd places; Yerbol Zhylkybayev, mathematics teacher - won the 3rd place; Ruslan Arkabayev, the teacher of NIS ChB Almaty - won the 2nd place. Gulnur Akhmediyeva, mathematics teacher, Shyngys Ualikhanuly, mathematics teacher, and Ansar Akim, computer science teacher from NIS Taraz won the 3rd place.

Gulmira Karagulova, the teacher of NIS ChB Almaty, was awarded the 1st place in the Festival of Methodological Developments on Project and Research Activities within the XIV International Contest "Mathematics and

Design" hosted by the Association of Teachers working with gifted children.

During the reporting period, the following educators were awarded by NIS AEO and the Ministry of Education and Science of the Republic of Kazakhstan:

- 4 educational workers were awarded with the Badge of Ybray Altynsarin;

- 6 - with the Badge of the Honorary Worker of Education of the Republic of Kazakhstan;

- 7 - with the Medal of the Nation's Gratitude;

- 1 - the Order of Kurmet;

- 98 - with the Certificate of Honour of the Ministry of Education and Science of the Republic of Kazakhstan;

- 68 - with the Letter of Appreciation of the Ministry of Education and Science of the Republic of Kazakhstan;

- 140 - with the Certificate of Honour of Nazarbayev Intellectual schools Autonomous Educational Organisation;

- 180 - with the Letter of Appreciation of Nazarbayev Intellectual schools Autonomous Educational Organisation.

The following educational workers were awarded with the Badge of Ybray Altynsarin for organising, developing and reviewing TV lessons: Nataliya Orekhova, Perizat Bigazina, Aksulu Kulmagambetova, senior managers of the Centre for Educational Programmes, and Gulzhan Bapanova, manager of the Centre for Pedagogical Measurements.

The badge of Honoured Public Education Worker was awarded to Aisulu Makanova, teacher-expert of English at PhM NIS Nur-Sultan, Bakhytgul Zhaksylykova, Deputy director for Science and teacher of Chemistry at ChB NIS Aktau, Raushan Zhabagina, teacherexpert of Physics at ChB NIS Pavlodar, Zhazira Imanbayeva, teacher-expert of Physics at PhM NIS Taldykorgan, Lyubov Issatayeva, teacherexpert of History at PhM NIS Taraz, and Gaukhar Shamatova, teacher-expert of Chemistry at ChB NIS Ust-Kamenogorsk.

The Medal of the Nation's Gratitude was awarded to Igor Ten and Yerzhan Shagimoldin, History teachers of NIS PhM Nur-Sultan, to Kalamkas Baytenova and Aimgul Ungarbayeva, senior managers of the Centre for Educational Programmes.

In recognition of his outstanding service to the country, Kassym-Jomart Tokayev, the President of the Republic of Kazakhstan, awarded Meiram Zhakenov, the first director of the first Nazarbayev Intellectual school of Physics and Mathematics in Nur-Sultan with the Order of Kurmet.





CONTENT OF EDUCATION





Educational programmes

Educational resources

Pastoral work

3.3

Supplementary education

3.4

Psychological and medical services

3.5

3.1. Educational programmes

Educational programme of Nazarbayev Intellectual Schools – "NIS-Programme"

The educational programme of Nazarbayev Intellectual Schools AEO - NIS-Programme (hereinafter - NIS-Programme) is implemented in 19 Intellectual schools. NIS-Programme is intended to develop fundamental academic knowledge, critical thinking and functional literacy of students through in-depth study of Science and Mathematics.

The NIS-Programme has proven to be effective due to high performance of NIS students including the results of PISA-2018. According to PISA, NIS students were ranked the fourth and sixth in Mathematics and Science and eleventh in Reading literacy.

The COVID-19 pandemic declared in March 2020 had a significant impact on the NIS-Programme implementation. Most of the activities planned for the development, revision and methodological support in the reporting year were carried out online.

Since Term 4 of the 2019-2020 academic year, the learning process in Intellectual schools is implemented online. Distance learning in Intellectual schools was possible due to comprehensive organisational activities and methodological support.

To implement high quality subject programmes the following activities were conducted during the reporting period:



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Monitoring the implementation of subject programmes and medium-term plans

Annual monitoring of the NIS-Programme implementation in Intellectual Schools is a practice required to improve subject programmes and reduce the gap between the desired and achieved curriculum.

Soft skills embedded in NIS-Programme contribute to the development of the 21st

century competencies crucial for successful work and career (Voogt and Roblin, 2010, 2012). Therefore, in the 2019-2020 academic year, the aim of the monitoring was to study the development of meta-subject skills of Intellectual Schools students.

The monitoring focused on 23 primary, secondary and high school subjects; 423 lessons were observed in 14 Intellectual schools..



Monitoring the development of students'

The monitoring results have shown that consistent approaches to determining the content of subject programmes, inter-subject integration, and real life application contribute to the development of NIS students' functional literacy and soft skills.

At the same time, the monitoring group found out that some teachers lacked consistency in classroom management and developing students' skills to analyse, argument and interpret data, work with different sources of information, and apply knowledge to experiments. In PISA study, these skills are core elements of the functional literacy.

In this regard, medium-term plans were supplemented with activities designed to

develop students' skills to work with a wide range of data and sources as well as research and creative assignments. The webinar programmes, methodological recommendations and guidelines included issues related to the development of soft skills and functional literacy.

Online revision of subject programmes and medium-term plans following the monitoring results

According to the monitoring results, 74 documents were revised: 17 primary, secondary and high school subject programmes and 57 medium-term plans.



Number of subject programmes and medium-term plans revised in 2020

Changes to **primary school** subject programmes and medium-term plans were intended to sequence learning objectives and optimise their number. A table of contents listing the units and topics was included in the subject programmes for Grades 1-5.

In **secondary school** language programmes, the focus on argumentation, analysis, evaluation and reflection skills was reinforced. In English, learning objectives were adjusted in accordance with the updated Common European Framework of Reference for Languages (CEFR-2018).

High school subject programmes (7 and 10-hour) for Mathematics were revised following the results of the Cambridge Assessment review and updated against the International A level Qualification.

Providing methodological and resource support for teachers

Methodological support for teachers is a key tool for improving the quality and effectiveness of the learning process.

During the transition to distance learning, methodological support for teachers has become even more relevant. Staff members of NIS AEO and its branches regulated new processes, developed new resources, and built new forms of communication that enabled timely and smooth shift to online learning. Annual subject trainings were provided in the form of webinars.

The following activities were carried out:

- /launching Teacher Exchange and Communication Platform;
- developing an Educational Resource Bank for online lessons;
- writing/Methodical Guidelines for organisation of educational process;
- writing Methodological guidelines for developing functional literacy;
- delivering trainings and seminars for teachers.

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Teacher Exchange and Communication platform

Teachers' experience in using information and communication technology, interactive teaching methods and different forms of classroom management varies depending on the frequency of certain approaches and methods, preferences, digital skills and individual abilities. Therefore, during the emergent transition to distance learning, mutual exchange of experience and support between teachers became important. To build a MS Teams-based exchange platform, 16 network teams of NIS subject teachers were created. They promoted an exchange of experience, ideas and learning materials and enabled teachers to receive support from CEP subject coordinators.

Improving the NIS-Programme content

The rapidly changing world, technological innovations, changes in habits and consumption style of the new generation, the changed labour market have significantly impacted the system of school education. These factors determine the need to revise the NIS-Programme with a focus on the formation and development of key competencies.

In 2020, at the initiative of the Chairperson of the Board, CEP started work on improving the NIS-Programme.

A draft version of the NIS-Programme improvement methodology has been developed

to ensure scientific validity of the revision process as well as common understanding and consistency of the content, pedagogy and assessment.

In September 2020, CEP presented a draft framework of NIS-Programme core competencies (Framework), which includes knowledge, literacy, skills, values and attitudes.

Project Groups have been created in each Intellectual school, to ensure the "school and teacher voice" is heard in curriculum revision process.

In October and November 2020, CEP met with the School Project Groups to discuss and contribute to the Framework. The opinions of Intellectual school students and graduates on the life values were studied with the use of SurveyMonkey online platform.

It was important to involve schools to know the opinions of the educational process participants. Almost all the schools actively contributed to the discussion on the proposed Framework and its components. Changes were introduced to the draft Framework based on the proposals of the Project Groups and the survey of students' opinions on values.

The work on improving the NIS-Programme will continue in 2021.

Preparatory work on improving the NIS-Programme



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Educational Resource Bank for online lessons.

During the period of distance learning, NIS initiated the creation of Educational Resource Bank for online lessons (hereinafter – Resource Bank) to include the materials developed by NIS teachers. These resources do not release teachers from lesson planning. They provide support and enable exchanging materials. Teachers were given access to flagship school frameworks that they can use to plan their own lessons adjusting them to students' needs. A survey conducted by the Research Department as part of a study on distance learning in Intellectual Schools showed that most teachers (80% - 2087 out of 2087) had been using the Resource Bank in their practice. Teachers also noted that these resources had expanded their personal resource boxes (83%), helped reduce the time for online lesson planning (81,3%) and made the lessons engaging and useful for students (75,1%). Some respondents (73,7%) think that the materials need to be adjusted when planning and delivering own lessons (Fig.3).

83,0% 84% 82% 80% 78% 76% 74% 72% 70% 68% ERB expanded ERB helps reduce ERB makes the

the time for

online lesson

planning

Teachers' opinions on Educational Resource Bank (ERB)



their personal

resource boxes

educational process Methodical Guidelines are annually developed to provide NIS teachers with

developed to provide NIS teachers with methodological support in organising the educational process in 2020-2021. Guidelines explain how to develop student's soft skills, different kinds of literacy and agency, give examples of teaching and learning materials and recommendations on how to implement the NIS-Programme in the context of distance learning.

lessons engaging

and useful

Methodical guidelines on how to develop student's soft skills, functional literacy and agency were compiled considering NIS AEO experience in the PISA-2018 international study, the OECD 'Education 2030: Future of Education and Skills' project and the annual monitoring results.

Methodological guidelines for developing functional literacy

NIS-Programme aims to develop functional literacy and academic knowledge of students. Functional literacy is developed by implementing learning objectives, studying the topics related to real-life situations, and creating tasks that would help students understand their content correctly and apply knowledge in practice.

In order to enhance NIS teachers' understanding of functional literacy, CEP developed 4 guidelines in the Kazakh and Russian languages. Methodological guidelines provide specific examples of tasks designed to develop students' functional literacy in terms of the content and process.

49

73.7%

ERB materials

have to be

adjusted

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NIS participation in the OECD Future of Education and Skills 2030 project gives access to relevant information and the ways of assessing student's competencies as part of the PISA study. To provide teachers with methodological support, CEP translated 4 OECD brochures into Kazakh and Russian:

1) PISA 2021 Mathematics Framework;

2) PISA 2021 Financial Literacy Analytical and Assessment Framework;

3) PISA 2021 Creative Thinking Framework;4) PISA 2021 ICT Framework.

All translated brochures are available for NIS teachers online at http://cep-forum.nis.edu.kz/.

Implementation of trilingual education

Trilingual education plays an important role in educating NIS students and developing their skills.

In 2020, trilingual education was implemented in three areas: monitoring the implementation of trilingual education policy, teacher professional development and methodological support.

Monitoring the implementation of trilingual education

The monitoring was conducted as part of the comprehensive monitoring of NIS students' soft skills development. The focus was on the development of speaking skills of the Russian speaking Grade 10 students in subjects taught in Kazakh (Kazakh language and literature, Geography, History of Kazakhstan and Basics of Law). The monitoring results showed progress in students' speaking skills in the Kazakh language from the time they entered the Intellectual Schools. Along with speaking skills, students noted increase in motivation to learn Kazakh. In other words, students understand the importance of the Kazakh language in terms of ethnic identity and its role in integrating and creating a sense of belonging to and unity with the Kazakh people.

Following the monitoring results, CEP identified the areas for providing teachers with methodological support in the implementation of trilingual education.

Professional development of teachers in the implementation of trilingual education

Considerable attention in the professional development of teachers is paid to the use of Content and Language Integrated Learning (CLIL) in teaching subjects in the second/ third language. This approach teaches subject content and language and prepares students for real life (Liz Dale, Wibo Van der Es, Rosie Tanner, 2011).

In the reporting period, CEP organised training courses for 215 NIS teachers on the following aspects of CLIL:

- CLIL: Language objectives and scaffolding strategy **(112 teachers)**;

- CLIL: maintaining speaking and writing skills and the use of projects **(103 teachers)**.



Teachers trained to use CLIL

Online seminars for teachers of History of Kazakhstan, History of Kazakhstan (Kazakhstan in the modern world), Geography and Basics of Law were delivered in Kazakh; and for teachers of Chemistry, Biology, Physics and Computer Science in English.

As a result of online seminars, teachers had learnt to maintain students' speaking and writing skills using Cummins' quadrants; apply effective tasks to maintain students' proficiency in writing and speaking; use and contrast methodological approaches to the development of speaking and writing skills; plan their lessons integrating language and non-language objectives; use differentiated, research and communicative approaches in classroom.

Methodological support of trilingual education

During the transition to distance learning, teachers implementing trilingual education, like many other teachers, faced new challenges.

Along with subject materials, teachers are provided with basic and additional resources for applying the CLIL approach in teaching practice. They are online resources such as

 http://www.playingclil.eu/ (European project including Student's book, Teacher's guide and various activities);

• https://www.clilmedia.com/ (an educational journal that contains different articles, games and teaching methods);

• http://www.macmillaninspiration.com/ new/resources/web-projects (engaging assignments in various subjects). Kazakh Language Immersion Project

Since 2013 Nazarbayev Intellectual Schools have been implementing the Kazakh Language Immersion Project to explore alternative and innovative methods of developing the national language. The project has been implemented jointly with the Innove Foundation (Estonia).

This project was initially launched in the Intellectual schools of Kokshetau and Taldykorgan. The third class of primary school students involved in the Kazakh language immersion project graduated in the 2019-2020 academic year. In the 2020-2021 academic year, NIS students of Grades 2 to 5 are involved in the project.

Due to positive results of implementing the Kazakh language immersion methods in the Intellectual Schools, in 2018, the Ministry of Education and Science initiated the dissemination of NIS experience to pre-school institutions of Nur-Sultan, Taldykorgan and Kokshetau:

- Nursery School "Karlygash", Medical Center affiliated to the Department of Presidential Affairs, 3 branches

- Nursery School №45 "Arman", Taldykorgan

- Nursery School №42, Taldykorgan

- Nursery School №2, Taldykorgan

- Nursery School Nº7 "Aysha", Kokshetau

- Nursery School №5 "Kuanysh", Kokshetau

- Nurserv School Nº1 "Arman", Kokshetau

In 2020, CEP delivered a webinar on the Kazakh language immersion for 80 teachers from pre-school organisations mentioned above.

Piloting subject programmes for personalised learning

In accordance with the mission of the NIS 2030 Development Strategy "Increase intellectual capacity of Kazakhstan through the integration of the best national and international practices and significant scientific achievements in the field of school education", NIS has been introducing the best international experience in the educational process.

Traditional education is focused on unified teaching of students in one classroom in the context of the same general pace and learning format. However, NIS research and experience show that each student acquires the learning material in individual pace and can learn subject programmes in less time. In this regard, there was a need to introduce personalised learning which is widely practiced in such countries as United Kingdom, USA, Singapore, Russia and etc.

Personalised education is an educational model with subject programmes, learning methods and academic strategies focused on individual needs, interests and sociocultural background of the student. This involves the use of a variety of methods, approaches and models that adapt learning and professional development to individual student's needs.

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Distance learning has shown the significance of digital educational technologies and the need for their integration into the learning process. They can help to build a model

of personalised learning and adapt the learning process to the interests, pace and abilities of each student.

NIS has been piloting two models of personalised learning since Term 2 of the 2019-2020 academic year. Model 1 allows learning the curriculum of Grades 8, 9, 10 in 2 years, and model 2 allows Grade 8-12 students to study certain subjects according to individual educational path.

In the 2019-2020 academic year, 14 students from 7 Intellectual schools studied according to the personalised programmes for mastering the curriculum of Grades 8-10 in 2 years, and 171 students from 12 Intellectual schools studied according to individual educational paths.

The academic performance and knowledge quality of students remained the same.

NIS conducted a survey among students, teachers, school administration and parents based on personalised learning results in the 2019-2020 academic year. The respondents noted the efficiency, flexibility, timeliness and increased motivation to learn. In the 2020-2021 academic year, 10 students from 5 Intellectual schools proceeded to study personalised programme for mastering the curriculum of Grades 8, 9, 10 in 2 years, 353 students from 16 Intellectual schools study according to individual educational path, including 61 students who continued study according to individual educational path started in the 2019-2020 academic year, and 292 students from 13 Intellectual schools decided to study according to individual educational path since the 2020-2021 academic year. 5 Intellectual schools delivered education according to individual educational paths for the first time.

Piloting and implementation of personalised learning is an intermediate stage in the transition to adaptive learning across the Intellectual schools.

Adaptive learning is research-based study in the context of cognitive sciences, artificial intelligence and big data to develop individual learning trajectory considering student academic performance, abilities, learning objectives, motivation and other personal characteristics.

This learning method involves the use of computer algorithms to encourage student interaction and provision of individual resources and learning activities to satisfy unique needs of every student.

Introducing adaptive learning solutions enables to implement e-learning which combines student learning and improved academic performance by developing, managing and using technological processes and resources.

In 2020, NIS AEO started cooperation with Arizona State University* (USA), the leader in adaptive and active learning approach, in the context of development and implementation of adaptive learning across Nazarbayev Intellectual Schools.

* Arizona State University (ASU) is the largest public research university in the United States founded in 1885. ASU has more than 126 000 students and about 5000 faculty members. U.S. News & World Report has named ASU №1 innovative university in the USA for five consecutive years since 2016.

ASU has been implementing adaptive learning since 2011:

uses a number of solutions and platforms for adaptive and active learning;

• over the past 8 years, more than 100 000 students have successfully completed study, in the 2019-2010 academic year - 25 000 students completed 27 academic courses;

• enables world education organisations to integrate the best practices in this field;

• successfully integrates LMS - Canvas based adaptive learning platforms (ALEKS, COgBooks and etc.).

In September, 2020, ASU expert delivered training for the members of NIS Board, Centres and structural divisions on adaptive learning methodology and systems. NIS studied international experience in adaptive learning systems and analysed 22 platforms (ALEKS, Knewton, Domoscio, SmartSparrow, Dreambox and etc.) used in 10 countries.

NIS and ASU have been defining selection criteria for adaptive learning platforms to be implemented in Intellectual Schools. 20 members of NIS Centres and structural divisions, and school teachers attended the training delivered by ALEKS* platform representative. The training participants were given access to a temporary account to test the platform as a student.

* ALEKS Corporation is a leader in creating Internet-based learning softwares with artificial intelligence. ALEKS is based on innovative research in mathematical cognitive science known as the knowledge space theory. ALEKS accurately assesses student knowledge and gives targeted instructions on topics that the student wants to learn.

ALEKS is used by millions of students in more than 100 different Mathematics, Science, and Business courses delivered by thousands of K-12 schools, colleges, and universities around the world.

OECD Education 2030: The Future of Education and Skills Project

In 2020, NIS continued to work as a national coordinator from Kazakhstan in the OECD's Education 2030: The Future of Education and Skills Project (hereinafter - E2030).

OECD Education 2030 aims to build a common understanding of the knowledge, skills, attitudes and values necessary to shape the future towards 2030. The project defines a clear vision and goals for education systems and provides the stakeholders with a common language for effective communication.

In 2020, NIS took part in the final stage of E2030 Phase 1 dedicated to curriculum research studies. Curriculum Content Mapping (CCM) materials were prepared and submitted to the OECD Secretariat. In November 2020, the OECD Secretariat released two international reports. The reports present the results of the Curriculum Content Mapping (CCM) exercise and the Policy Questionnaire on Curriculum Redesign (PQC).

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Cover pages of the OECD reports



The first report, What Students Learn Matters: Towards a 21st Century Curriculum, addresses the issue of time lag in curriculum redesign, the discrepancies between the content of today's curriculum and the diverse needs of preparing students for the future. The second report, Curriculum Overload: A way forward, aims to support reflecting on the issues of curriculum overload.

Two NIS representatives took part in seminars for experts within the strand Mathematics Curriculum Document Analysis Project (MCDA). Participants of the seminars undertook further work on finalising the report, and discussed the forms of presenting and comparing the data within this strand of the project.

In the reporting period, NIS representatives including NIS employees and students of the

Intellectual Schools took part in two OECD Global Forums: the 1st virtual workshop of the Global Forum on the Future of Education and Skills 2030 in May and the 2nd Global Forum in October.

The main purpose of the 1st forum was to provide a platform for sharing challenges, and an opportunity to formulate possible solutions to overcome the challenges in curriculum delivery during the pandemic, and to explore the experience of other countries. The meeting involved three focus groups (FG), with FG1 – policy makers, representatives of government bodies of various countries, FG2 – teachers and teacher educators, and FG3 – school and university students from around the world. Students of Nazarbayev Intellectual Schools were provided the opportunity to present the group work results at the final session.



The participants of the Global Forum on the Future of Education and Skills 2030

The 2nd Global Forum addressed the challenges and educational responses during school reopening/starting a new school year with a special focus on equity issues. Particular attention was paid to voice and experiences of students from around the world. Students discussed the changing role of teacher and teaching during the pandemic working in groups with teachers and researchers. NIS students were assigned to different focus groups and were able to share their experiences and opinions on curriculum, assessment, teaching and learning in the new academic year. During the discussions, future vision of the Teaching Compass - 2030 (tentative) was mapped out.

To communicate the ideas of the project, the work on translating materials into Kazakh and Russian was continued. The fourth brochure of E2030 materials has been released. All materials are available on the Educational Resource Portal in International Research Projects section: documents, books and brochures, presentations, videos, information materials.



Cover pages of brochures released in the framework of E2030 Project

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In December 2020, teachers of Nazarbayev Intellectual Schools took part in a joint initiative of the OECD, UNESCO and the International Task Force on Teachers for Education 2030. Recognising the important role of schools and the innovative experiences of educators at the forefront of the COVID-19 pandemic, they invited teachers to have their experience heard at a global scale through short videos. The purpose of this initiative is to foster a cross-country dialogue around rebuilding education out of these challenging and testing times of COVID-19. NIS teachers recorded 47 videos, 9 of which were sent to the OECD Secretariat for publication, and the other videos were posted on the CEP website http://cep.nis.edu.kz/.

The OECD's Education 2030: The Future of Education and Skills project informs NIS of the main trends in curriculum development and revising the content of education, provides opportunity to discuss strategies and issues of revising and implementing the curriculum globally. The project helps to compare the curriculum reform in Kazakhstan with similar reforms in high-performing countries.

3.2. Educational resources

Development of textbooks according to NIS-PROGRAMME

In order to implement strategic objectives towards 2030, NIS carries out the work on the development and revision of textbooks and teaching materials (hereinafter – textbooks) in accordance with NIS-Programme.

Textbook revision (Grade 1)

In the reporting period, textbooks in Mathematics, Introduction to Science, World Understanding, ICT, Art for Grade 1 in the Kazakh and Russian languages were revised according to NIS-Programme. During the workshops in December 2020, the last adjustments were introduced to the content of the textbooks; the final versions were approved.

Textbook development (Grade 10)

The textbooks for Grade 10 are developed in nine subjects: "Mathematics", "Physics", "Chemistry", "Biology", "Arts", "Computer Science", "Geography", "History of Kazakhstan" and "World History". Textbooks are developed by authors with extensive experience in textbook development. During the workshops for authors and editors, a range of difficulties related to the implementation of the spiral approach to the system of learning objectives, methodological tools, and a unified design structure were addressed.

The textbooks integrate relevant methods and tasks, such as analytical essays, SWOT-PEST-GAP analyses, which contribute to the formation of students' analytical, assessment and planning skills. Textbooks for Grade 10 include extension tasks to prepare for external assessment, and elements of professionally oriented training in high school.

Piloting Mathematics textbooks in Grades 9 and 11

In the 2020-2021 academic year, Nazarbayev Intellectual Schools started piloting the textbooks

for Grade 11 in "History of Kazakhstan (Kazakhstan in the modern world)", "Geography", "Kazakh Language and Literature" and "Russian Language and Literature";

for Grade 9 in "Mathematics" (parts 1 and 2), developed in the Kazakh and Russian languages according to NIS-Programme.

Piloting takes place in 19 schools, and involves 494 teachers and 1682 students.

| Language of instruction | Kazakh | | | Russian | | | |
|-------------------------|--------|----|----|---------|----|----|--|
| Grade | А | В | С | D | E | F | |
| Quantity/ 1 item | 25 | 25 | 25 | 25 | 25 | 25 | |

| Language of instruction | | Kazakh | | Russian | | | |
|-------------------------|--|--|--|--|---|--|--|
| Subjects | - | Kazakh Language and Literature | Geography | Kazakh Language and Literature | - | History of Kazakhstan (Kazakhstan in the modern world) | |
| | Geography | - | Russian Language and Literature | - | Kazakh Language and Literature | Russian Language and Literature | |
| | History of Kazakhstan (Kazakhstan in the modern world) | Russian Language and Literature | - | History of Kazakhstan (Kazakhstan in the modern world) | Geography | - | |
| TOTAL | 50 | 50 | 50 | 50 | 50 | 50 | |

Revision of textbooks for Grade 9

As a result of piloting, the content of the textbooks was revised by nearly 20% to ensure the quality of the content, presentation of material, layout and availability of tasks for the development of critical and logical thinking.

The World History textbook became the starting point for the study of the modern history of the world. The textbook helps to achieve the

goals of critical thinking development, fostering the desire for further learning, and serves as the basis for acquiring deep subject knowledge and the formation of ¬research skills.

The textbook includes insets with maps to effectively illustrate the description of the political and economic influence of the European countries of the XXth century, and identify the cause-and-effect relationships of events.



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Some minor changes were introduced to the content of the History of Kazakhstan textbook. Illustrative material was revised: maps and artworks were replaced with authentic stock photos of the period of 1920-1940.



WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

Some historical artworks and stock photos are kept in museums of the Russian Federation and international photo banks.

The theoretical content of the Biology textbook reflects various natural phenomena and laws of wildlife. Each topic contains features "Do You Know?", "Remember", "Discussion", "Check Yourself", which contribute to the development of research skills and increase interest in science. Each lesson begins with an inquiry question that students can answer as the result of study. The main purpose of the Art textbook for Grade 9 is to develop the interest in cultural identity and peculiar features of different nations in art. The study of subject-specific materials is focused at the development of artistic vision, the ability to analyse artworks of visual and applied art, the ability to think critically and express feelings through creative works using means of artistic expression. The consents of foreign artists such as Ned Kahn, Steven Spazuk, Ronald Kleier, Christoph Tönges, Roxanne Meadows, etc. were obtained to use their artworks in the textbook.

PART 1



In the reporting period, contracts were concluded with photo stocks for the sale of illustrations designed by CEP employees. These illustrations are available in Alami Limited and Mary Evans photo stocks. Requirements of photo stocks for illustrations: Alami Ltd. – technical characteristics and a certain image quality, Mary Evans – historical content.

Mary Evans Picture Library
16.01.2020 - the Contract signed
113 photos posted
50% of sales revenue
The bank contains works of CEP artists A. Bekishev,
P. Baimurzayeva.



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Digital Educational Resources

The use of Digital Educational Resources along with hard copy textbooks allows teachers to supplement the content, methods and forms of teaching, and gives the students an opportunity to build their own educational trajectory, including the implementation of the accelerated learning programme.

The distinctive features of the Digital Educational Resources are as follows:

 Gamification of the learning process – the presentation of educational materials in a playful way using a bright design;

Interactivity of resources – study of educational materials in real time;

• Multilingualism – the opportunity to study in three languages: Kazakh, Russian, English (science and mathematics in secondary schools);

• Multiplatformity-running in any browser based on Webkit and Gecko;

• Availability - the opportunity to use DER online and offline.

The use of DER has become relevant during the period of distance/online learning in the context of COVID-19 pandemic declared in 2020. They help to intensify the educational process, individualise learning and partially automate the teachers' work.



PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO



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Digital Educational Resources for primary and secondary schools were developed in the period from January to December.

In 2020, 30 digital educational resources were developed for Grade 1 in the following subjects: Science, Mathematics, World Understanding, and 120 digital educational resources for Grade 10 in the following subjects: Biology, Geography, Computer Science, History of Kazakhstan, Mathematics, Physics and Chemistry.

DER developed in 2020 are available on the NIS website for DER (https://der.nis.edu. kz/) for use within the educational process of Intellectual schools.

2020 saw the development of KazLingua application for Grades 7-8 (Web, Android, iOS), which allows you to learn Kazakh language in classes with the Russian language of instruction.

KazLingua is based on a frequency dictionary, that is, each topic and lesson contains the most frequently used words and phrases corresponding to the age-appropriateness and the level of students, and presented in a digital format. This helps to remember and use individual words, phrases and whole sentences in the Kazakh language in daily speech.





KazLingua application is designed for self-study of Kazakh language, and meets the regulations and requirements of the State Compulsory Standards of Education of the relevant levels of education (SCSPE and SCSE of the Republic of Kazakhstan).

Digital Educational Platforms

In 2020, the NIS Centre for Information Technologies and Service conducted work on the development and maintaining information systems of the Unified Information Educational Environment (hereinafter – UIEE).

One of the main development activities was the final work on a new version of **School Management System (hereinafter – SMS)** information system, which is a school component of the UIEE complex, and provides control automation of key administrative and educational school processes.

The works have been carried out in stages since the end of 2018, and currently, SMS is used in 19 schools. The system is expected to be in commercial operation in 2021.

As part of the 3rd (final) stage of the development, NIS implemented the mechanism for managing teacher's work to ensure transparency and accuracy of the workload. This mechanism provides the ability to add positions, assign an employee to a position, select an employee from a list, remove an employee from a position, and edit the dates of appointment and removal of an employee from a certain position.

It also has functions for setting relevant categories, teaching excellence and rates of teachers with the possibility to view, edit and fill the data.

Due to the implementation of the mechanism for managing teacher's work, the following modules were finalised:

• Register of teachers: creating an opportunity to view data about school teachers according to the parameters;

• Thematic planning: the integration with the Substitution Log module, and the mechanism for copying thematic plans were implemented to ensure the convenience of creating the same thematic planning for different or parallel grades;

• Schedule: creating a quick search filter for convenience;

• Block distribution: the display of the current teacher's full name was optimised based on the current date; the date of approval of the block distribution; the start and end dates of the terms;

• Academic workload: checking the position creation date.

In addition, it provides for the possibility to open the module of Features of Competitive Selection Log (CSL). The Information module was developed to display additional information in My Timetable module.

The central School Management System application was developed in order to archive data for the past academic years, and the storage architecture was designed so that to provide an opportunity to connect to the central system from any School Management Systems. This task required the replication method used to increase the system availability and its performance and ensure scalability.

Piloting the block distribution mechanism of students' groups in 2019 has revealed shortcomings such as high complexity of compilation and inability to make quick changes in the group composition, which caused difficulties in using School Management System by a number of NIS methodologists. In this regard, the alternative distribution mechanism was developed in 2020, to provide the opportunity to plan and account for elective courses and clubs and eliminate the abovementioned shortcomings of the block distribution mechanism.

This new functionality has resulted in the development of such modules as Workload, Settings for Elective Subjects, Timetable, Log, Thematic planning, Criteria-based Assessment for interaction and group display of the alternate block distribution, and the modules of Group Management and Grouping of Students.

The use of aSc Timetables software for automatic generation of timetables by some Intellectual schools, required integration of School Management System. New functions allow generating automatically the timetables in aSc Timetables based on the data from the School Management System, and backloading the results to the Timetable module of the School Management System.

During the reporting period, the software was developed and tested, and the new

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functions were demonstrated to the Deputy Directors for academic work, methodologists, IT specialists of schools and other stakeholders. 6 user manuals were prepared according to the updated SMS functionality.

The Bank of Legal Acts was developed in accordance with NIS information systems development plan for 2020. The new version of the system operates on a more advanced platform, and provides a wider set of features and ease of interface configuration. The opportunity to sign up and sign in through a corporate account has been implemented; the functions of adding, sorting, searching, downloading in different formats, editing the content and details of legal acts have been implemented; the ability to download images with automatic compression has been created; the page load has been optimised; and the module for viewing statistical data has been developed. Currently, the database is put into operation, and technical support for users is provided.

As part of the development of the Unified Profile system in 2020, the Workload tab was developed to view the academic hours; the data of the School Management System on teachers' workload was synchronised; and the corresponding statistical reports providing for uploading data in MS Excel format were compiled. The Unified Profile is integrated with 1C Enterprise: Salary and Personnel Management system. Also, during the reporting period, the reports were compiled with the help of a special analytical service providing for visualisation of data and selecting the types of graphs and charts. In order to provide access and fill in personal data, it is planned to implement two-factor authentication for secure login by NIS employees during the remote working in early 2021.

Another type of work is the development of functions of the Research portal. The new version of the website operates on an advanced platform, and provides a wide set of functions and ease of interface configuration. These includes the opportunity to sign up and sign in for internal (NIS users with corporate accounts) and external (those who signed up on the website) users. A website management system has been created, which provides the opportunity to change sections, content, pages, manage rights, access, user roles, track actions on the website including the possibility of report compilation. The functions of automatic submitting and processing research requests, submitting and processing requests for access and download of confidential research papers have been introduced. The Research Catalogue module has been created to view, add, publish and comment on research papers. To ensure the user-friendliness of the website, personal account section has been developed to display users' personal data, applications, requests, discussions and research. Currently, the website is piloted with provision of the technical support.

NIS developed the website for students' career guidance.

The website has the following features:

• user authorisation, calculation of the Unified National Testing scores

based on the results of various international certificates;

• publication of various information;

• discussion on the forum;

• making appointments with career guidance consultants;

• providing feedback to website administrators and technical support.

The website management system has been created to manage pages, menu items, loading of graphic materials, add and manage users and their roles, maintain and record actions on the website. The user's personal account has been created to fill in personal data, keep history of correspondence with other users, create and view publications in various categories. The website is put into operation, and currently is at the content development stage.

Career guidance consultants were trained to work with the website. Also, they were introduced to the relevant features of the website.

One of the recent projects launched in 2020 was the development of library management system.

NIS conducted the analysis of current business processes, and identified the relevant requirements. The library management system will help to modernise the library system through the centralised management system and the remote individual user access from anywhere; optimise the business processes of book distribution; and ensure the safety of the document collection in compliance with information security requirements.

The system consists of the following modules:

- Arrivals
- Publications
- Readers
- Borrowings
- Inventory.

The modules make it possible to create a list of arrivals, process incoming publications, distribute publications in electronic catalogues, keep accession and non-accession records, assign barcodes in schools, move publications, automatically add readers from the Contingent and the Unified Profile informational systems, lend publications using barcodes and make inventory using barcode readers.

From the beginning of 2021, it is planned to put the system into operation, implement development tasks and work on the unification of reference books and the data migration from existing separate KABIS (Kazakh Automated Library Information System) school systems.

In addition, the work carried out in 2020 include:

• the development of NIS corporate website, particularly the opportunity to receive CVs and resumes;

• the report of Uploading Competitive Selection Logs has been implemented within UIEE providing an opportunity to draw the report across all the schools;

• the possibility to block the grading process in the Competitive Selection Log information system in the School Management System interface;

• the finalisation of Model Course Plan, Contingent, CSL, UIEE, SMS information systems for students studying according to the personalised (accelerated) learning programme;

• the implementation of changes in the section of Post-Secondary Education in the module of Educational Records in order to fill in the full data on NIS graduates;

• the finalisation of the Unified Information Educational Environment to draw the Report on Graduates;

The following work has been done during the launch of the updated functions in the

Student information system ensuring students' mobility within the NIS networks:

• the notification templates for parents and system users have been developed in two languages;

• the manuals for NIS secretaries and system administrators have been prepared;

• NIS secretaries have been trained to work with the system;

• advisory support to NIS employees on transferring applications to the new system has been provided;

• the user access rights have been configured.

Further development of the "Student population" system is planned for 2021.

In 2020, the NIS Centre for Information Technologies provided technical support for 27 information systems and NIS websites. During the reporting period, 4 588 user requests were processed; 20 events were held to train users to work with the systems; and technical documentation was approved. Users were also introduced and trained to work in a new electronic document management system used by NIS, its branches and subsidiaries.

Formation of the library collection

The NIS library collection is formed according to NIS-Programme based on the requests, needs and interests of teachers and students, and the analysis of national and foreign book market.

To ensure the quality of the educational process and supply with modern educational, methodological and scientific publications, the libraries work with Kazakhstani and foreign publishers to supplement the library collection.

2020 saw a qualitative analysis of library collections resulted in writing off outdated textbooks and teaching manuals, which were replaced with new textbooks developed according to NIS-Programme. A lot of attention was paid to the formation of collections in additional languages in order to improve the diversity and quality of the library fund.

As of December 2020, the total book fund included 656 149 copies of educational, methodological, scientific literature and fiction.

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| N≏ | Intellectual School | Total book fund | Learning materials | Fiction | Textbooks | Supplementary literature | Electronic publications | Dictionaries | Encyclopedias | Donated books |
|----|--|-----------------|--------------------|---------|-----------|-----------------------------|----------------------------|--------------|---------------|---------------|
| 1 | Aktau ChB | 24 317 | 14 804 | 5 197 | 1 208 | 2 272 | 188 | 78 | 390 | 180 |
| 2 | Aktobe PhM | 29 720 | 15 903 | 5 364 | 3 405 | 3 551 | 504 | 62 | 342 | 737 |
| 3 | Almaty PhM | 27 269 | 15 936 | 6 049 | 194 | 3 305 | 309 | 84 | 219 | 1 1 7 3 |
| 4 | Almaty ChB | 26 964 | 16 448 | 5 1 4 4 | 1 538 | 3 065 | 168 | 38 | 204 | 359 |
| 5 | Atyrau ChB | 29 916 | 15 181 | 5 596 | 749 | 3 148 | 260 | 128 | 391 | 1 758 |
| 6 | Karaganda ChB | 24 007 | 10 636 | 5 456 | 2 545 | 4 444 | 310 | 49 | 293 | 274 |
| 7 | Kokshetau PhM | 39 452 | 18 907 | 8 183 | 1 688 | 8 366 | 478 | 142 | 901 | 787 |
| 8 | Kostanay PhM | 23 685 | 12 933 | 5 626 | 715 | 2 662 | 186 | 27 | 826 | 710 |
| 9 | Kyzylorda ChB | 27 253 | 16 429 | 4908 | 2 648 | 1 636 | 180 | 82 | 603 | 767 |
| 10 | International school of Nur-Sultan | 57 324 | 27 605 | 13 568 | 6 895 | 8 589 | 211 | 71 | 175 | 210 |
| 11 | NIS Nur-Sultan | 26 988 | 11 992 | 8 686 | 357 | 4 656 | 199 | 211 | 240 | 318 |
| 12 | Nur-Sultan PhM | 29 952 | 14 139 | 5 723 | 1 782 | 5 427 | 214 | 217 | 792 | 1 624 |
| 13 | Pavlodar ChB | 30 191 | 17 601 | 5 532 | 2 305 | 3 519 | 287 | 188 | 319 | 440 |
| 14 | Petropavlovsk ChB | 20 309 | 10 527 | 5 436 | 1 059 | 2 503 | 187 | 49 | 221 | 327 |
| 15 | Semey PhM | 25 603 | 10 096 | 6 490 | 949 | 6 775 | 375 | 138 | 383 | 397 |
| 16 | Taldykorgan PhM | 48 491 | 25 007 | 12 762 | 3 443 | 5 807 | 613 | 64 | 192 | 603 |
| 17 | Taraz PhM | 26 345 | 13 460 | 5 399 | 1 454 | 3 610 | 290 | 139 | 426 | 292 |
| 18 | Uralsk PhM | 41 489 | 25 768 | 6 645 | 4 191 | 3 811 | 401 | 156 | 245 | 272 |
| 19 | Oskemen ChB | 38 286 | 23 346 | 7 149 | 3 251 | 3 232 | 404 | 77 | 273 | 554 |
| 20 | Shymkent PhM | 31 773 | 17 336 | 4 709 | 3 927 | 2 932 | 379 | 159 | 502 | 1 829 |
| 21 | Shymkent ChB | 26 815 | 15 029 | 5 506 | 1 462 | 2 684 | 356 | 137 | 525 | 1 116 |
| | TOTAL: | 656 149 | 349 083 | 139 128 | 45 765 | 85 994 | 6 499 | 2 296 | 8 462 | 14 727 |

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The total book fund of NIS Libraries by December 2020

The development of reading culture and reading literacy.

The development of reading and functional literacy remains one of the leading areas of work of NIS libraries, carried out through various active game techniques.



Many forms of work, including library lessons and events, were adapted to meet the requirements of distance learning.

Intellectual schools continue to host mass projects to promote reading involving students, teachers and parents. The following projects could be mentioned: READx, Bibliosumerki, Reading man, 1.2.3, Book Start, Festival of Edible Books, Reading Train. Teachers-organiserscurators and teachers of dormitories also took part in the organisation of projects.

Many library events dedicated to reading literacy reflect the historical aspect of anniversaries and memorable dates of our republic.

Poetry reading, library lessons, reading clubs meetings, individual meetings within READx, Reading time and Reading Train projects were dedicated to the 175th anniversary of the great poet - Abay Kunanbayev.



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Various methods used to popularise this event include: "A poem on a clothesline", "Literary Jam", development of a "Dictionary of Values" based on Abay's Words of Wisdom. Individual events – "Book Fest", the contest "Abay's Words of Wisdom", "Do you know Abay?" in the format of "Who? Where? When?" intellectual game, the literary evening "The Great Son of the Kazakh Steppe", the evening of poetry "The Great Kazakh - the Great Abay".

The meetings of Reading time were also dedicated to Mukagali Makatayev, the distinguished Kazakh poet and writer. The History of Dariya - Khan's Wife was staged in honour of 80th anniversary of Abish Kekilbayev.

The Reading man event was dedicated to the 1150th anniversary of Abu Nasr Al-Farabi.

During this book event students answered the questions about the life and work of Abu Nasr Al-Farabi. They also received Oyla journal as a gift for completing the tasks.

New groups of Library Assistants have been created within the framework of the Year of Volunteering in Kazakhstan. The mission of Library Assistants is to provide assistance in organising various library events, arrange the book fund, inform about the library rules, etc.



Reading clubs actively work both in traditional and remote format and involve their participants in reading popular and fascinating books in Kazakh, Russian and English languages. Students are provided with electronic resources and free access to fiction (kitap.kz, adebiportal.kz, etc).

The following gaming techniques are used to develop functional literacy: Book Dingo, What's it to you, Speed dating with new books, BookPicture, Bring your book!, etc. Such events have a positive impact on students' social and adaptive skills as they develop critical thinking, skills for working with various types of resources and independently searching for the necessary information in the library. To promote the interest of students in reading books as a professional choice, NIS arranged the following meetings with interesting people: Zaure Torekhanova, a children's writer; Sandugash Nurkanova, a publisher of Aytshy Azhetay magazine; the meeting with the authors of the book titled Super-Me or the main purpose of life; and Shalkarbay Izbassarov, an akyn.

Interactive events in celebration of the First President Day were held online and included videos, digests of Elbassy publications, quizzes and interactive games.

NIS made efforts to promote the project "100 books recommended for NIS students". Within this work, NIS librarians took part in the following workshops delivered by foreign specialists: Book Frenzy, Poem in Your Pocket, Poe-Tree, Literary Jam, Favorite First Page, Reading in a circle, Poem from Book Spines, Blind Date with a Book, Reading Illustrated Books.



Development of Information Literacy and Research Skills.

Information literacy is becoming the most important skill for students and teachers in the context of distance learning. This includes the skills of searching, analysing and processing information. For this purpose, the libraries organise a wide range of trainings and lessons through the use of various methods considering the needs and abilities of students.



The NIS libraries used the following methods: 6 Hats of Thinking and Three-Column Method to develop skills of working with periodicals based on the following popular science periodicals: Around the World, Science and Life, Oyla, National Geographic Kazakhstan, which allow students to see interdisciplinary links with social sciences; reading the article "Seven Facets of the Great Steppe" of Nursultan Nazarbayev, the President of the Republic of Kazakhstan, using the Write-around and World Cafe methods developed by the US experts, the APA format in referencing and the technique of Conducting Mini Case Studies in Classroom.

Teachers-librarians took an active part in Lesson Study project implemented in Intellectual schools. As members of focus groups, they performed joint lesson planning, teaching and observation, and analysed the learning process.

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The research-oriented events also include: intellectual game "What? Where? When?" in honour of 80th anniversary of Nursultan Nazarbayev, Elbassy of the Republic of Kazakhstan; thematic weeks on Low-cost and Clean Energy; Brain Ring intellectual game in honour of 1150th anniversary of Abu Nasr Al-Farabi, a phylosopher, mathematician, music theorist and a scientist of the East.

Intellectual schools conducted trainings and lessons on the use of Guided Inquiry and BIG6 research models. During the classes, students got acquainted with the methods of developing research activities and acquired the skills of searching and analysing information.



Teachers-librarians of NIS Uralsk involved students in ReadWorks remote project on the formation of reading and language skills and information literacy. The project provides interdisciplinary connection using both fiction and scientific texts considering the age of students and their language level.

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In the context of distance learning, libraries organised a range of webinars for NIS teachers on useful research methods: How to create a Pathfinder to help students collect materials, Effective Information Search, Publishing in Scopus&Web of Science.

All the NIS libraries held training sessions for teachers and students on the use of such electronic resources as Twig, Bilimland, iTest, EBSCO.

Teachers-librarians created interactive collections of materials on LibGuides online platform, which could provide new opportunities for students and teachers of Intellectual schools in terms of project and research activities in the context of personalised learning.

February 2020 saw a series of meetings with teachers-psychologists on the book written by Lee Jonghyun. These lessons involved students constructing their own houses and drawing landscapes. The students expressed their thoughts and emotions on paper with their own hands. This project was built on the library experience of South Korea. WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO



Intellectual schools hold regular integrated lessons with the use of various interesting methods:

• integrated lessons with Global Perspective teachers;

• English lessons with the use of Keyword Hexagon technique;

• an integrated lesson dedicated to the 175th anniversary of Abay Kunanbayev;

 an integrated lesson on Customs and Traditions;

• an integrated lesson on Social Studies of Ancient Civilization designed to develop research skills and information search in internet resources and books;

• an integrated history lesson and Timeline game as an introduction to the lesson;

• an integrated lesson with teacherscurators-organisers on the Role of Education and Science in Human Life;

 an integrated lesson of Russian language within the unit of Earth Planet: Oceans on the Problems of Ocean Pollution;

• an integrated lesson for teachers-librarians with teachers of Kazakh literature; discussing the story of Kokserek by Mukhtar Auezov;

• an integrated lesson with curators on Proverbs I Use in My Life; a curatorial hour on Books for Self-development: Read Correctly, etc.

Integrated lessons combine interactive library activities with the lesson; support crosscurricular links; promote reading and resource literacy using various methods; and strengthen cooperation between the library and the teaching staff.



Libraries regularly share interesting materials in social networks aimed at developing reading skills and self-improvement, create promotion videos on new literature and involve students in online projects to develop reading and language skills. They publish educational articles and materials, undertake activities and run Read Online campaigns, actively involve the school community in this work.

Professional development of NIS librarians

Since the beginning of distance learning, teachers-librarians have organised a series of webinars for NIS librarians, curators, educators on different aspects of library work to contribute to educational work, self-education and motivation. They provided training on independent development of language skills, self-improvement, leadership skills, emotional intelligence, system thinking, etc.



In December 2020, Springshare specialists organised a webinar on the implementation and use of the online content management

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system for LibGuides libraries. The webinar allowed teachers and librarians to gain new skills of working with online databases, online maintenance and creating their own content. Working on the LibGuides platform allowed teachers and librarians to develop new skills of working with online information space.

3.3. Pastoral work

Intellectual schools implement a unified system of pastoral work that is closely related to the educational process, and corresponding to the values of Rukhani Zhangyru and Mangilik Yel programmes for modernisation of public consciousness aimed at the formation of a competitive, patriotic, proactive, socially adaptive, strong and creative, morally and physically healthy personality.

2020 was a year of change. The entire school community of Nazarbayev Intellectual schools switched to distance learning. Schools faced a difficult task of organising the educational process online. Despite the restrictions, Intellectual schools continue implementing social, research, creative, sports projects and events.

"Shanyrak" student community

All NIS students of Grades 1-12 are involved in various meaningful and collective activities of Shanyrak student community

The community contributes to the creation of a unified team of classes, the development of leadership skills, promotes respect, care, trust, solidarity, responsibility, and helps to solve emotional problems.

Shanyrak community, as the main student community organisation, is involved in all school activities: social events, creative contests, festivals, sports competitions, open days, exhibitions, tours and charity fairs.

The introduction of mentoring in the activities of student community contributes to the development of inter-generation communication and cooperation, patronage and support between students.

Student Government Leaders Forum

On December 8-9, 2020, NIS PhM Kokshetau hosted the first online annual forum of NIS Student Government Leaders.

At the dialogue platform, the Student Government Leaders met with Kulyash Shamshidinova, Chairperson of the Board of Nazarbayev Intellectual schools, and were able to address questions. The leaders asked questions on the current situation of COVID-19 pandemic, how to become a leader and what life skills a leader should have.

The leaders met with Rauan Kenzhekhanuly, the Founder and Director of WikiBilim Public Fund; the Founder of Bilim Media Group; Executive Director of Ulttyk Audarma Burosy Public Fund; and the head of Zhana Gumanitarlyk Bilim project. Kazakh Tilindegi 100 Zhana Okulyk. Rauan Kenzhehanuly spoke about the patriotism for the Motherland; about the start of the Kazakh Wikipedia project; about the activities of Bilim Media Group foundation; the importance of developing the state language and involving the population in learning the native language. Also, he detailed the qualities that a modern young person should have, and noted that agency is one of these qualities.

The leaders played Brainboi intellectual game on the knowledge of educational projects implemented in schools. The leaders easily coped with the tasks and proved that they deserve to be the Student Government Leaders.

For the first time, the Leaders forum was organised in the format of a debate tournament, which brought together more than 300 representatives of student self-government from all regions of Kazakhstan. The Leaders discussed the topic of Proactive Thinking VS Reactive Thinking.

"Rukhani Zhangyru" workshop

On November 17-19, 2020, Intellectual schools held a workshop on "Values in the Formation of the Nation of a United Future." Zhanar Bukanova, head of Rukhani Zhangyru centre, Kazakhstan Institute of Social Development delivered a speech on the workshop.

The workshop was attended by teachers-organisers-curators, teachers-librarians, teachers of dormitories, teachers of supplementary education of Nazarbayev Intellectual Schools.

The colleagues were introduced to the six main principles of the Programme and learned how to apply them in everyday life. They also received information about the special projects implemented in Kazakhstan within the framework of this Programme.
"Tugan Elge Tagzym" (A Bow to the Motherland) Regional Research Expedition

Due to COVID-19 pandemic, the expedition was conducted online in the period from November 3 to December 3, 2020.

A special feature of the project is the development of scientific projects by students in 6 areas and routes:



The competitive works made by students were reviewed and evaluated by a competent jury consisting of the employees of Astana HUB International Technology Park Corporate Fund, the Institute of State History, Baitursynov Institute of Linguistics, Kasietti Kazakhstan Research Centre, the National Museum of the Republic of Kazakhstan and the branch of the Margulan Institute of Archeology in Nur-Sultan.

1 136 NIS students took part in the expedition, and 578 projects were developed. 200 projects and 465 NIS students moved to the next stage. The students prepared research projects. They developed 3D projects (maps, websites, task collections and applications).

The winners of the project:

The historical legacy - Uly Dala Orkeniyety (Great Steppe Civilization):

| Place | Intellectual School | Students |
|-------|-----------------------|---|
| 1 | NIS PhM Shymkent | Team: Yerdaulet Makhambet Zangar Otesh Akniyet Abdashim Assiya Ilyaskarova Mukhtar Kabylbek Shyngys Yerler Alua Mynzhasar Ansar Abdulla Ayazhan Tolegen Nursultan Zhaksybekov Zhanassyl Rysbek |
| 2 | NIS ChB Almaty | Temirlan Kumarov |
| 3 | NIS ChB Petropavlovsk | Team: Abinur Askar Azat Andamassov Daniyar Ramazan |

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| Place | Intellectual School | Students |
|-------|-------------------------|--|
| 1 | NIS PhM Nur-Sultan | Team: Assylzhan Yegen Ansat Dzhartybayev |
| 2 | NIS ChB Pavlodar | Temirlan Zorlykbayev |
| 3 | NIS ChB Ust-Kamenogorsk | Nargiz Toktamyssova |

The nature reserve route - Tugan Olkem - Zhumak Meken!:

The innovation/industrial development - Ondiristik Innovaciya Kepili - Ziyatkerlik Aleuyet:

| Place | Intellectual School | Students |
|-------|------------------------------------|--|
| 1 | NIS PhM Karaganda | Kamila Tazabekova |
| 2 | NIS ChB Taraz | Nuray Narshibayeva Aliya Anarbayeva |
| З | International School of Nur-Sultan | Insar Tungushbayev |

Best in the following nominations:

• Selt Etkizer, Eren Oi/Project Inspiration – Saniya Kaynarkyzy, NIS PhM Taraz;

• The best essay for Tugan Zher -Tugyrym - Shugyla Nurzhankyzy, NIS PhM Taldykorgan.

Annual forum Uly Dala Muragerlery (Heirs of the Great Steppe)

The forum was held online on December 14, 2020. In 2020, the Forum was dedicated to the 1150th anniversary of Al-Farabi, the 175th anniversary of the great Abay, and the 80th anniversary of Elbassy Nursultan Nazarbayev.

The Chairperson of the NIS Board congratulated participants of the Forum. The following prominent figures of the Republic of Kazakhstan delivered motivational speeches: A. Aiymbetov, an astronaut and a holder of the highest state award - the order of Kazakstannyn Enbek Eri (Hero of Labour) Gold Star; Yuri Pya, a holder of the highest state award - the order of Kazakstannyn Enbek Eri (Hero of Labour) Gold Star and the national award - Altyn Adam (the Golden Man); A. Musakhodzhayeva, the People's Artist of the Republic of Kazakhstan, a holder of the highest award - the order of Kazakstannyn Enbek Eri (Hero of Labour) Gold Star; A. Akchurina, a 2020 graduate of NIS PhM in Nur-Sultan, the winner in the nomination of Technology of the third Forbes Kazakhstan; and Sofia, the world's first humanoid robot with artificial intelligence. The winners and holders of the first places of Tugan Elge Tagzym regional research expedition also delivered their speech and demonstrated their projects at the Forum.

In celebration of the Independence Day of the Republic of Kazakhstan, NIS also held conferences, round tables, meetings, reading contests, drawing contests, essay contests, flash mobs and challenges. The school community was congratulated by the following public figures and famous persons:

Zulfiya Gabidullina - a captain of the Kazakhstan Paralympic team, the champion of the Asian Para Games, the champion of 2017 World Championship in Swimming;

Altynbek Korazbayev - a composer and singer, a People's Artist of the Republic of Kazakhstan;

Aygul Ulkenbayeva - a distinguished Kazakh dombra player, singer, kyuishy and composer. The Honorary Worker of the Republic of Kazakhstan.

Oralbay Abdykarimov – a Kazakh statesman and public figure.

"Smart Thursday" project

The project is implemented in the format of "meetings with opinion leaders" and designed for discussing the issues of public life, science, economics and culture.

In 2020, the meetings were held online with the following cultural figures, athletes, scientists and public opinion leaders:

Yuri Pya, Doctor of Medical Sciences,

Chairman of the Board of the University Medical Centre Corporate Fund, Director of Surgery and Science of the National Research Cardiac Surgery Centre;

Ilya Ilyin, Kazakhstani weighlifter, Honoured Master of Sports of the Republic of Kazakhstan;

Elizabeth Tursynbayeva, a silver medalist of the World Championship, four-time champion of Kazakhstan, bronze medalist of the Asian Winter Games;

Aybolat Zhaudyr, Director of Gorky State Academic Russian Drama Theatre;

Gulnara Bazaraliyeva, Togyzkumalak World champion among women;

Askar Dzhumadildayev, a scientist and mathematician;

Zhandos Utegulov, Peyman Pourafshary, Vesselin Paunov, Stavros Poulopoulos and Cevat Erisken, Dos Sarbassov and Gavin Slade, scientists and professors of Nazarbayev University.

The undoubted advantage of the online meetings is the opportunity for all schools, students, teachers and parents to get involved. 256 meetings were held in 2020 with more than a thousand participants at each event.

Serving society

In 2020, Serving Society project was implemented in accordance to the approved Action Plan, and the Action Plan of the Year of the Volunteer.

52% of the total number of school students took part in events and project activities dedicated for children in orphanages; 48% of them participated in projects dedicated for nursing homes and emergency response centres for mothers. 80% of students participated in traditional school activities such as various charity fairs and concerts involving the entire school community, as well as children from orphanages and elderly people from nursing homes. Schools also organise charity events (more than 50) to help children with diseases and those from low-income families.

The number of people willing to engage in volunteer activities increases annually. The main public service projects are listed in the table below:

| NՉ | Event | Activities | Participants |
|----|---|---|---|
| 1. | Road to School nationwide campaign | Providing children from orphanages with stationery materials, school supplies, tools for creative activities and handicraft | NIS PhM Nur-Sultan NIS ChB Pavlodar NIS PhM Taraz NIS PhM Taldykorgan NIS ChB Karaganda NIS ChB Kyzylorda IB Nur-Sultan NIS ChB Petropavlovsk NIS PhM Semey |
| 2. | Good Deed for the Future project | Organisation of events and concerts to celebrate memorable dates and holidays | NIS PhM Uralsk NIS ChB Pavlodar NIS PhM Taraz NIS ChB Karaganda NIS ChB Almaty NIS ChB Kyzylorda IB Nur-Sultan NIS ChB Aktau NIS ChB Petropavlovsk NIS PhM Taldykorgan |
| З. | Birthday Celebration creative meetings | Organisation of events for children from orphanages including educational games, quizzes and flash mobs | NIS ChB Pavlodar NIS ChB Karaganda NIS ChB Ust-Kamenogorsk NIS ChB Petropavlovsk NIS PhM Taldykorgan NIS PhM Shymkent |

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| Nº | Event | Activities | Participants |
|----|--|--|---|
| 4. | Respect and Care project | for elderly people in nursing homes NIS PhM Nur-Sultan NIS ChB Atyrau NIS ChB Karaganda NIS ChB Kyzylorda NIS ChB Ust-Kamenogorsk NIS ChB Almaty NIS PhM Taldykorgan NIS ChB Almaty NIS PhM Kokshetau NIS PhM Semey | |
| 5. | DIY Gifts project | Handmade gifts for elderly people (spectacle cases, handbags, gloves, socks and shawls) | NIS PhM Taraz NIS ChB Atyrau NIS ChB Karaganda NIS PhM Aktobe NIS ChB Almaty NIS ChB Ust-Kamenogorsk IB Nur-Sultan NIS ChB Aktau NIS PhM Shymkent |
| 6. | lt is a Beautiful World project | Drawings and paintings made by young artists as a gift for elderly people | NIS ChB Karaganda NIS ChB Ust-Kamenogorsk NIS ChB Petropavlovsk |
| 7. | Give a Portrait to a Friend project | A New Year's photo shoot and individual portraits for each orphanage graduate in memory of their childhood | NIS PhM Uralsk |
| 8. | Weekend Club project | Hobby classes held on weekends | NIS PhM Uralsk NIS ChB Pavlodar NIS PhM Nur-Sultan NIS ChB Karaganda NIS PhM Aktobe NIS ChB Atyrau NIS ChB Kyzylorda NIS ChB Ust-Kamenogorsk NIS PhM Taldykorgan |
| 9. | Mentor, Peer-to-peer, Recreational Biology, English for Everyone, Modern Dance School, Volunteer club, Lingua Town volunteering projects | English language lessons and subject lessons | NIS PhM Kostanay NIS PhM Almaty NIS ChB Pavlodar NIS ChB Karaganda NIS PhM Aktobe NIS ChB Almaty NIS ChB Kyzylorda NIS ChB Kyzylorda NIS ChB Ust-Kamenogorsk NIS PhM Taldykorgan NIS ChB Aktau NIS ChB Petropavlovsk NIS PhM Kokshetau NIS PhM Semey |

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| Nº | Event | Activities | Participants | | | |
|-----|--|---|---|--|--|--|
| 10. | Craftswomen, Dance Lovers Club creative school projects | Dance classes, flash mobs; the events in Nazarbayev Intellectual schools - dance groups of orphanages took part in the concert programme; visiting science and creative exhibitions of NIS students within the Summer School | NIS PhM Uralsk NIS PhM Taraz NIS ChB Karaganda NIS ChB Kyzylorda NIS ChB Aktau NIS PhM Taldykorgan NIS PhM Kokshetau | | | |
| 11. | Urpaktar Sabaktastygy (Continuity of generations) project | The project aims to promote care and respect to elderly people, improve their emotional state and increase their importance and role in society. | NIS PhM Kostanay NIS PhM Uralsk NIS PhM Taraz NIS PhM Nur-Sultan NIS ChB Atyrau NIS ChB Karaganda NIS PhM Aktobe NIS ChB Almaty NIS ChB Kyzylorda NIS PhM Shymkent NIS ChB Ust-Kamenogorsk NIS PhM Taldykorgan IB Nur-Sultan NIS ChB Petropavlovsk NIS PhM Kokshetau | | | |
| 12. | We are the Children of the Earth environmental volunteering | Volunteer Saturday cleaning works of urban areas; Ecodvizh (Environmental movement) environmental campaign – cleaning the parks, snow; the collection and delivery of waste paper. | NIS PhM Kostanay NIS PhM Almaty NIS PhM Uralsk NIS PhM Taraz NIS ChB Karaganda NIS PhM Aktobe NIS ChB Atyrau NIS ChB Atyrau NIS ChB Kyzylorda NIS ChB Almaty NIS ChB Ust-Kamenogorsk IB Nur-Sultan NIS ChB Petropavlovsk NIS PhM Taldykorgan NIS PhM Kokshetau NIS PhM Semey | | | |
| 13. | A social video made by school volunteers of Karaganda on the danger of using headphones when crossing the roadway received the award in the nomination of the Best Social Video at Terrikon regional festival of non-professional cinema. | | NIS ChB Karaganda | | | |

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| Nº | Event | Activities | Participants |
|-----|---|---|---|
| 14. | Birgemiz (We are together) republican project | The events and activities organised within the cooperation with regional volunteer organisations (Republican League of Volunteers, Youth Resource Centre, the Goodwill Clubs in Nur- Sultan, Almaty, Semey, Shymkent, Karaganda) promoted the exchange of experience and ideas with the leaders of volunteer movements. | NIS PhM Almaty NIS ChB Pavlodar NIS ChB Karaganda NIS PhM Aktobe NIS ChB Almaty NIS ChB Atyrau NIS ChB Kyzylorda NIS PhM Taldykorgan NIS ChB Ust-Kamenogorsk NIS ChB Ust-Kamenogorsk NIS ChB Aktau IB Nur-Sultan NIS ChB Petropavlovsk NIS PhM Kokshetau |
| 15. | Volunteer of the Year international competition | The team of NIS Uralsk, the winner in the nomination "Contributing to the Solution of Social Problems" within the Volunteer of the Year international award. | NIS PhM Uralsk |
| 16. | Volunteer of the Year international competition | The team of NIS Karaganda, the winner in the nomination "Best Volunteer Team in the Country" within the Volunteer of the Year international award. | NIS ChB Karaganda |
| 17. | 28 Stitches project | Students knitted clothes from special yarn for premature newborn children from the perinatal centre | NIS PhM Semey |
| 18. | 4 Paws project | Students supported a shelter for abandoned animals | NIS PhM Semey |
| 19. | Heart to Heart project | Students made smart toys for autist children from the centre for children with disabilities | NIS PhM Semey |

Participation of 27 students and 4 teachers from NIS PhM Nur-Sultan and NIS ChB Karagandy in the opening ceremony of Birgemiz Republican volunteer coordination front office by the President Kassym-Jomart Tokayev became an additional motivation for further development of the volunteer movement.

More than 150 students became volunteers in the nationwide campaign against the coronavirus pandemic; 70 children took part in DosCamp.kz online summer camp; more than 200 students took part in Birgemiz: BILIM, Uide Oqy and Asyl Jurek projects. 9 students were awarded medals and 17 students were awarded a letter of appreciation from the First President of the Republic of Kazakhstan, Elbassy Nursultan Nazarbayev.

10 students were awarded letters of appreciation from regional akims.

More than 30 students were awarded letters of appreciation from city and regional public organisations.

5 students were awarded money certificates of 50 000 KZT and 1 student from Taldykorgan – 120 000 KZT as the Best Volunteers of Birgemiz Bilim project.

3 students of NIS ChB Kyzylorda and PhM Nur-Sultan were awarded certificates "For outstanding work as a volunteer in "Be Kind" project by UNICEF Kazakhstan".

1 student of NIS PhM Taldykorgan was awarded the winner's certificate in the nomination of Bilgenimen bolisken; awarded the Asyl Jurek prize of Akim of Almaty region and money certificate of 500 000 KZT organised in honour of closing the year of volunteering.

Urpaktar Sabaktastygy social project

Within the social project, Intellectual schools organise weekly thematic meetings of students with elderly and retired people. During these meetings, students organise various master classes, reading clubs, quizzes, intellectual games, sports, dance activities, information and functional literacy workshops.

2020 saw 206 events and activities involving 6 409 (47%) NIS students.

Urpaktar Sabaktastygy social project allowed students to create a stable platform to build relationships ensuring the continuity of generations. The students gained their first experience of social relations, morality and humanism.

100 Kyuidyn Tarikhy (The history of 100 kyuis), Kazak Andery (Kazakh songs) projects

Network projects such as 100 Kyuidyn Tarikhy and Kazak Andery involve Grade 7, 8, 9, 11 students and occupy a special place in the educational system.

Dombra playing and song flash mobs, contests, themed music evenings and meetings, school morning assemblies, master classes, festivals and concerts were traditionally held and organised for students and their parents.

On November 29, 2020 Intellectual schools conducted online dombra flash mob to celebrate the Day of the First President of the Republic of Kazakhstan. Dombra players from all Nazarbayev Intellectual schools simultaneously performed well-known kyuis.

School morning assemblies, master classes on the study and performance of Kazakh kyuis and songs showed that the Kazakh musical culture is of great interest to children.

2020 saw 391 events and activities involving 6,279 (45%) NIS students within the 100 Kyuidyn Tarikhy project.

340 events were organised and 7 985 (58%) of NIS students took part in extracurricular activities in terms of the Kazak Andery project.

Kazakh Kuresi (Kazakh wrestling)

A two-day experience exchange seminar was held for PE teachers of Intellectual schools in Nur-Sultan and the International school in Nur-Sultan within the framework of the Memorandum on cooperation between Nazarbayev Intellectual schools and Qazaq Kuresi Association.

During the workshop, the teachers were introduced to the practical use of the elements of Kazakh Kuresi through play to develop speed, endurance and strength.

Also, the teachers were invited to a tour around the new, multifunctional, modern Jekpe Jek sports centre equipped with many different halls.

Within the memorandum of cooperation and the Smart Thursday educational project, NIS held an online meeting with Beibit Ystybayev, Kazakh wrestler, the world and Asian champion in Kazakh Kuresi, and the three-time winner of Kazakhstan Barysy tournament.

Sports contest on Togyz Kumalak national game

All Intellectual schools run clubs for national sports game Togyzkumalak. In December 2020, UNESCO included Togyzkumalak intellectual game in the Intangible Cultural Heritage list thus increasing the motivation of students in all schools to play the game.

An online sports contest on Togyzkumalak was held on November 3-6, 2020, on the PlayOK platform attended by 90 NIS students of Grades 1-12. The sports contest was refereed by the staff of the Togyzkumalak Federation of Kazakhstan.

The winners of the contest were awarded medals, certificates and cups for the prizewinning team places.

The list of winners:

80

| | Grades 1-6 (Boys): | |
|--|---|---|
| 1st place Abylaykhan Tynyshtykbay NIS Taldykorgan | 2nd place Bernar Kultemirov NIS Kokshetau | 3rd place Samir Omirbekov International School of Nur-Sultan |
| | Grades 1-6 (Girls): | |
| 1st place Aynel Kairat NIS Taldykorgan | 2nd place Azhar Sarsenbay NIS Kokshetau | 3rd place Nursara Tulegenova International School of Nur-Sultan |
| | Grades 7-9 (Boys): | |
| 1st place Bekzhan Adilzhappar NIS Semey | 2nd place Abylay Mametan NIS Uralsk | 3rd place Adilbek Turganbayev NIS Aktobe |
| | Grades 7-9 (Girls): | |
| 1st place Zhuldyzay Mynaytbassova NIS Kyzylorda | 2nd place Assel Rysbay NIS ChB Shymkent | 3rd place Sanida Nursalim NIS Uralsk |
| | Grades 10-12 (Boys) | |
| 1st place Bekarys Zhortabayev NIS Uralsk | 2nd place Dosymzhan Raiymbek NIS Kyzylorda | 3rd place Ilyas Saitakhmet NIS Kostanay |
| | Grades 10-12 (Girls) | |
| 1st place Zhuldyz Sadykbek NIS Kyzylorda | 2nd place Aruzhan Oralbekova NIS Semey | 3rd place Nazerke Rymbayeva NIS Taldykorgan |
| | Team ratings: Grades 1-6: | |
| 1st place NIS Taldykorgan | 2nd place NIS Kokshetau | 3rd place International school of Nur-Sultan |
| | Grades 7-9: | |
| 1st place NIS Kyzylorda | 2nd place NIS Uralsk | 3rd place NIS ChB Shymkent |
| | Grades 10-12: | |

1st place NIS Kyzylorda

2nd place NIS Uralsk **3rd place** NIS Semey

3.4. Supplementary education

External elective courses

Extended education is implemented through elective courses to encourage research, educational and cognitive activity of NIS students, to maintain their interest in science and technology, and also to select and support more capable and gifted young inventors.

Due to the epidemiological situation in the country and the world, the external elective courses were delivered online during summer holidays.

Online elective courses with Stanford University professors

Stanford University is one of the most reputable and ranked universities in the United States and the world. It is located in Silicon Valley and ranks the 2nd in the QS World University Ranking 2020. Graduates of Stanford University founded the world's leading companies such as Google, Yahoo!, Hewlett-Packard, Cisco Systems, etc.

The online summer school courses at Stanford University were attended by 60 NIS students in 4 areas:

- Artificial Intelligence;
- Biomedical Engineering;

 Research in the Biological Sciences: Neuroscience;

– Materials Science and Engineering.

By the end of the courses delivered by Stanford University faculty, the students have developed teamwork skills as a result of studying with other NIS students and working with foreign students on joint projects; improved language skills; developed creative, critical and analytical thinking skills; strengthened research skills; and deepened their knowledge in the field of biomedical engineering, neuroscience, materials science and artificial intelligence.



Online elective courses with David Hanson In November 2020, in order to deepen the knowledge in robotics and artificial intelligence, NIS students for the first time attended online elective courses of David Hanson, Ph.D. in interactive arts and technology, founder of Hanson Robotics, inventor of Sophia robot, PKD, Bina-48 and many others projects.

Hanson strives to create real caring machines working in the fields of art, software and hardware. He combines visual art with cognitive science and robotics, invents new skin materials, facial expression mechanisms and collaborative artificial intelligence developments in humanoid works of art such as the Sophia robot, which may engage people in naturalistic face-to-face conversations, and are currently used in research, education, therapy and other Al applications.

The elective courses on "Science, Technology, Education in the Context of the Future of Artificial Intelligence" and "Humanizing Robots: Human-Machine Symbiosis and Artificial Intelligence for Good" were attended by 400 students of Grades 9-12 who are interested in studying technology and IT, and engaged in ICT and robotics projects.

The lecturer introduced the course participants to the robot Sophia in an interactive dialogue form. He spoke about the role of artificial intelligence and robots in people's lives, science and art; innovations in the field of artificial intelligence, robotics and engineering; made a tour of the Hanson Robotics laboratory; told about the employment opportunities in Hanson Robotics; career opportunities in this field; and gave detailed answers to many questions from participants.



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Online elective course of Research Science Institute at Massachusetts Institute of Technology (MIT)

MIT (Cambridge, USA) is one of the most prestigious technical universities in the world, leading the world university ranking (QS World University Ranking 2018). Research Science Institute (RSI).

Every year, the MIT Research Science Institute welcomes 80 of the world's best students to attend a summer school as part of STEM education. The lecturers of the summer school are world's distinguished scientists – professors of MIT, Harvard University and other prestigious US universities, Nobel Prize laureates.

Yeldar Urkumbayev, Grade 12 student of NIS Nur-Sultan, winner of the gold and silver medals of the Republican Olympiad in Biology was awarded prestigious Rickover Award while studying at RSI summer school. Dilnaz Kamalova, Grade 12 student of NIS PhM Almaty also took part in Olympiads and science competitions and won prizes.

The students took part in the 6-week RSI summer online courses and lectures delivered by professors from MIT and other famous universities; worked on a research project with a supervisor; attended workshops and trainings; and participated in cultural events.

Online elective courses with NSU SESC (Specialised Educational Scientific Centre at Novosibirsk State University)

Specialised Educational Scientific Centre at Novosibirsk State University (Russian Federation) (hereinafter – NSU SESC) is one of the oldest educational centres of the Russian Federation in the field of physics and mathematics implementing the school curriculum with advanced mathematics, physics, chemistry, biology, computer science with use of the latest learning technologies. NSU SESC attracts students who have shown their disposition and ability to study mathematics, physics, chemistry and biology, and creates conditions for further development of their potential, autonomy and interest in scientific activities.

In 2020, 27 NIS students - participants of the Republican Olympiad in science and mathematics, winners of international subject Olympiads and members of the national team took part in elective courses of in-depth study of physics, chemistry and biology to prepare for the Olympiads.

Online elective courses under educational programmes of Talent and Success educational foundation

Talent and Success educational foundation implements educational programmes for gifted children demonstrating outstanding abilities in arts, sports, natural sciences, and have a disposition to technical and humanitarian creativity. For this purpose, the foundation established year-round Sirius Educational Centre at Olympic facilities in Sochi. At the Centre, outstanding figures of science, culture and sports teach children of the age 10 to 17 with the highest achievements in hockey, figure skating, natural sciences, academic music, choreography and painting.

In the summer of 2020, for one month, 80 NIS students took part in online training in extended and small groups, completed tasks and projects under the educational programmes on Olympiad and Applied Mathematics, Olympiad Physics, Basics of 3D Modeling and Basics of Python Programming.

The project programmes were implemented in order to disseminate the experience of solving crucial technological and production problems among students in the format of developing cross-technological projects in priority areas of science and technology development in the Republic of Kazakhstan and the Russian Federation. Problem-solving: involving gifted students in solving real scientific, industrial and technological problems in science and business; developing applied research and engineering projects; acquiring new knowledge and achieving valuable results beyond the education system; introducing students to advanced technologies and the best practices of modern production on real case studies; preparing for participation in competitions on Junior Skills methods; learning practical competencies in project and research activity in the form of developing engineering, technical and IT projects – engineering prototypes or IT products (1 project per 3-5 students); participating in engineering projects contests or Junior Skills movement.

Learning a Second Foreign Language project Learning a second foreign language by NIS students corresponds to the mission of Nazarbayev Intellectual Schools, "to enhance the intellectual capacity of Kazakhstan through the development and implementation of an innovative, multilingual system of school education in science and mathematics that integrates the best Kazakhstani traditions, international experience and practice".

Learning a second foreign language became necessary due to global changes both in the world and in the country that emphasise the role of foreign languages.

Intellectual schools teach German, French, Chinese, Korean and Japanese as the second foreign languages. There are also Italian, Spanish and other languages depending on the region, the needs of students and the personnel availability.

In the 2019-2020 and 2020-2021 academic years, the subject of Second Foreign Language was introduced as part of online elective courses for Grade 7-12 students.

As of December 10, 2020, 3 073 students are studying a second foreign language



Learning a second foreign language provides additional opportunities for intellectual, personal and professional growth and continuing the students' education at the best world universities.

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SUMMER SCHOOL 2020

The Summer School is delivered annually by 20 Intellectual schools for NIS and general educational school students to develop their research and project skills, to deepen subject knowledge and prepare them for admission to the leading universities of Kazakhstan and abroad.



In 2020, 8 824 students of Intellectual schools and 150 students of general educational schools attended online summer school free of charge due to the epidemiological situation in the country.

Summer School programmes were developed by NIS teachers (both Kazakhstani and international) in the following areas:

• Getting students ready for Olympiads in general educational subjects;

• Programming, web-design, robotics;

• STEM, 3D modeling, design thinking, entrepreneurship;

• Advanced Kazakh, English, Russian languages and literature;

- Advanced Science and Mathematics;
- Advanced Humanities;

• Preparation for international exams and admission to universities;

• and etc.

Information about the Summer School courses is available at www. summerschool.nis. edu.kz

The Summer School is a successful platform for developing students' research and critical thinking skills and deepening their academic knowledge.

Students' feedback

I have so many great memories from Summer school. I made friends with many people from our school. I gained positive experience. I just want to express how grateful I am for these two weeks.

NIS student in Atyrau

NIS COOPERATION WITH PARTNER SCHOOLS

The NIS 2030 Development strategy² includes such an indicator as "Number of partner schools in Kazakhstan and abroad" according to which each school should have at least 5 partner schools.

As members of the International Baccalaureate, Council of International Schools

Thank you for the holiday you had organised, for team-building and lots of positive emotions.

NIS student in Ust-Kamenogorsk

(CIS), World Association of Lesson Studies (WALS), International Association for Educational Assessment (IAEA) and European Association for Educational Assessment (AEA-Europre) and other international communities Intellectual schools cooperate with international partner schools. They are also members of organisations in the CIS countries, Central Asia and etc.

² Approved on December 1, 2018 by the Supreme Board of Trustees of autonomous educational organisations Nazarbayev University, Nazarbayev Intellectual Schools and Nazarbayev Fund

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The "Partner Schools" project primarily aims to instill intercultural communication skills, global thinking and tolerance in three areas:

• Teaching students according to the educational programme of the partner school;

• Collaborative research projects and publication of their results in international journals;

• Immersion in the culture, history and art of the host country.

In partner schools, students improve their academic performance, exchange experience with their peers, develop research and analytical skills, carry out experiments in modern laboratories, learn new approaches to selfdirected learning and immerse in the language of the host country.

In 2020, due to the epidemiological situation in the world, most of the events and cooperation activities were implemented online. Student exchange events took place only in the first quarter of the year.

Partnership with International School of Lyon

10 NIS students and 2 teachers from Aktau took part in the conference "UN Models in International School of Lyon" held in Lyon, France.

Lyon school was founded in 2004 and refers to the International Baccalaureate World School. High school includes Grades 9-12, Grade 9-10 students study according to the IGCSE programme and Grade 11-12 students - according to the International Baccalaureate programme. It is also an accredited centre for Cambridge Assessment International Education and member of the European Council of International Schools and English School Association.





Partnership contributed to the following:

• Students developed their project management skills through joint research and social projects;

• Students improved their knowledge of French as a second foreign language;

• Teachers exchanged their experience;

• "School partnership" project was implemented within the school internationalization;

• Key recommendations of the Council of International Schools (CIS) on deepening NIS understanding of international and intercultural communication and global citizenship were implemented.

Partnership with Genius@Pintar National Gifted Centre

Since 2015, NIS (PhM) of Nur-Sultan has been working closely with Genius@Pintar National Gifted Centre (Bangi, Malaysia) (hereinafter - Genius@Pintar) in the framework of student exchange.

In 2020, 6 students of Genius@Pintar studied in Intellectual School (PhM) of Nur-Sultan.

Genius@Pintar was founded in January, 2011. The main focus is identification, training and support of talented and gifted students in Malaysia. These activities are implemented by the Malaysian government as part of the state modernization programme for 2020 including the reforms in public education with the support of Mrs. Seri Rosmah Mansor, wife of the Prime-Minister. The National University of Malaysia developed a curriculum for Genius@Pintar following the Government's

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instruction. It enables teachers to reveal the student's creative potential and talent. 1220 students of secondary and high schools study general educational and preuniversity programmes at the Centre.



As part of the distance partnership, the schools participated in global school projects:

Pen Pal; Global Classroom Project: Sustainability in schools (study of the school environment in five areas: Biodiversity, Energy, Global Citizenship, Health, Waste Management, Transport and Water) along with other schools from all over the world.

3.5. PSYCHOLOGICAL AND MEDICAL SERVICES

PSYCHOLOGICAL SERVICE

NIS Psychological service is aimed at strengthening psychological health and wellbeing of students, ensuring their safety and protection, and providing psychological education to parents.

Due to the epidemiological situation and transition to distance learning, the work of school psychologists has changed. The focus shifted to mitigating the mental health effects of the pandemic. The changes referred to building an algorithm for interaction between psychologists and students, their parents/ guardians, and school personnel online.

Although psychological counseling was provided online, it was in high demand among students, parents and teachers. During the reporting period, school psychologists provided **4 181** individual consultations: **2254** - for students, **1309** - for teachers, and **618** - for parents.

Sample student questions:

• challenges of distance learning (difficulties in acquiring the learning material and concentration, lower learning motivation, procrastination, unwillingness to turn on a camera, microphone and etc.);

• anxiety due to the pandemic and the restrictions (inability to meet with friends and classmates, social isolation, fear about getting sick, feeling worried about relatives and etc.);

• emotional state (depression, apathy and etc.)

• child-parent relationships (increased parental control, conflicts and disagreements);

• interaction with teachers.

Individual cases required offline consultation. Offline consultations were held taking preventive anti-epidemic measures for students studying online and primary school students studying offline³. In total, psychologists conducted 191 consultations offline.

То build school-family relationships, improve understanding and interaction of parents and adolescents, and support minors, NIS held 279 events from January to March, 2020 attended by 514 Grade 7 students and 528 parents/guardians as part of the 'Close-knit family' programme.

105 teachers-organisers-advisers (89), dormitory counselors (15) and educators (1) participated in the programme as facilitators.

In addition, psychologists who completed international training courses trained 50 more school psychologists, teachers-organisersadvisers and dormitory counselors.

In the context of distance learning, all activities aimed at adapting the newly arrived Grade 7 students were carried out taking into account the changed study and work conditions. It was impossible to implement 'Close-knit family' programme in the context of distance learning. Therefore, a group of school psychologists jointly with NIS staff members developed "We are Family" online-course. The course programme consists of 7 parent-student sessions lasting 40 minutes each and aims to improve the relationships between parents and children.

The programme was piloted in 24 classes of Intellectual schools in Aktobe, Almaty (ChB), Nur-Sultan, Pavlodar, Semey, Uralsk, and Shymkent. The programme involved 576 students and 602 parents/guardians.





Also, psychologists delivered 114 webinars for Grade 7 students aimed at creating conditions for their successful adaptation, preventing possible difficulties in learning and psychological testing of students' personal characteristics.

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NIS employees developed "Book for New Comer Students" and "Parents' Handbook" for Grade 7 students and their parents within the framework of "Family and School in a Changing World" dialogue platform. The books were printed and delivered to all Intellectual schools.

Table. Webinars for parents within the framework of "Family and School in a Changing World" dialogue platform.

| No. | Theme | Target group | School in charge |
|-----|---|--|--|
| 1 | "NIS Guide" (brochure presentation) | parents of Grades 1, 6-7 students | NIS of Taldykorgan, Petropavlovsk, and Karaganda |
| 2 | "Living under the same roof. Dos and Don'ts for parents in the distance learning" | parents of Grades 2-3, 8-9 students | NIS of Kostanay, Almaty (PhM), Atyrau, and IB Nur-Sultan. |
| 3 | "The Five Love Languages. How to better understand your child" | parents of Grades 4-5 students | NIS of Kokshetau, Shymkent (ChB), and Aktau. |
| 4 | "I am a Parent of a Teenager. How to communicate with a teenager and have fun" | parents of Grades 10-11 students | NIS of Semey, Ust-Kamenogorsk, Nur-Sultan (PhM), and Aktobe |
| 5 | "A modern graduate. Questions and answers". | parents of Grade 12 students | NIS of Taraz, Pavlodar, Almaty (ChB), Shymkent (PhM), and Uralsk. |

Psychological services run online marathons and meetings with parents.

On April 18-24, 2020, NIS run "April at Home" online marathon to improve parent-child relationship and increase parents' knowledge of psychology. 628 participants attended the marathon.

Online meetings with parents focused on psychological mapping around the theme "Stories for those who did not have a childhood". The target audience includes parents with angry or aggressive behavior, are prone to domestic violence, who experienced violence and abuse in their childhood. School psychologists received a positive feedback of participants and requests to hold the next meetings in this format.

Feedback of parents who participated in "We are Family" programme, webinars and marathons emphasised the effectiveness of such activities.

In the reporting period, schools intensified the work with parents. The work included the following strands:

• parental support for students during the distance learning;

• the role of parents in adapting Grade 7 students to new learning conditions;

• parental support for students of Grades 10 and 12;

• support for dealing with psychological consequences of the pandemic;

• the role of parents in preventing family conflicts and domestic violence;

• the role of parents in reducing screen time;

• support for students 'at risk'.

In addition, NIS psychologists and staff members developed webinars for students on different topical issues. For example, there are 2 elective courses on career development for Grade 12 students: "Future management: how to easily and quickly adjust to changes" and "Psychotechnology of success: my 5-year plan". The webinars are aimed at encouraging students to make an informed choice of a university, future specialty and profession. They received a positive response from NIS graduates.

The quarantine conditions have raised the issue of internet safety as students have an opportunity to spend unlimited time on the computer. Excessive internet use can cause bullying, exposure to negative and sexual content, financial fraud and identity theft, enrollment in groups popularizing sorrow and death, eating disorders (anorexia and bulimia) and use of psychoactive drugs. To prevent the above negative consequences, NIS developed webinars for students on "Internet addiction" and "Cyberbullying". It also developed memo presentations for parents and recommendations for student on safe use of the Internet, and delivered training workshops for psychologists who consulted parents and students offline.

At the same time, NIS held 99 consultations with teachers and 189 consultations with parents to support students 'at risk'. These activities were carried out online. Psychologists faced the following difficulties:

 They did not have an opportunity to monitor students' behaviour, mood and their interaction with peers offline;

 Lesson observation provided little information as students did not turn their cameras on, they could hear just students' answers and read the chat;

 It was difficult to engage those students who have communication problems, students with psychological problems in the family. These students did not have an opportunity to stay alone with a psychologist (they were often with their parents in the same room).

Psychologists held 540 individual consultations with students 'at risk'. Students' requests mainly touched upon such issues as:

• emotional state: anxiety, fears, irritation, apathy, and detachment;

• worries about unsatisfactory grades in the SAU and CIE external assessment;

- child-parent relationship;
- interpersonal conflicts with parents;
- interpersonal conflicts with peers;

• unfavourable situation in the family due to parents' divorce;

• worries about family members getting sick with coronavirus;

- death of a close relative;
- bullying at school;
- domestic violence;
- sleep deficit;
- sensitivity to criticism;
- concentration issues;
- low motivation;
- low self-esteem;
- worries about uncertainty;
- problems of communication with peers;

• problems in relationship with a girl/ boyfriend.

Progress of students 'at risk' is determined against the following indicators: cognitive, emotional, medical, situational and biographical, external/internal resources. Therefore, school psychologists use a risk assessment protocol to observe students at risk for self-destructive behaviour.

The dynamics is monitored through the analysis of individual psychocorrection routes designed individually for each student and approved by the School Mental Health Council. During the reporting period, NIS schools conducted 19 Councils.

In addition, school psychologists provided support to students who faced difficult life situations. There was a group of students who require increased interaction with psychologists and school officers. Total number of students at risk was 185. 35% of them experienced academic challenges and 26.5% had problems in relationships with parents.

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Difficult life situations faced by the majority of students

Psychological support for students at risk and students with a need for increased attention requires a multidisciplinary approach and teamwork. In this regard, school psychologists held webinars for students and their parents as well as teachers-advisers and subject teachers.

Professional development of school psychologists was implemented online and included 2 training courses attended by 110 school psychologists.

In the reporting period, medical and psychological services played a significant role in the learning process for both students and parents and school teachers.

MEDICAL SERVICE

During the reporting period, NIS medical services carried out the following activities:

- ensuring students' well-being;
- applying preventive measures;

• providing information to prevent diseases

In addition, due to the COVID-19 pandemic and restrictions, medical services implemented infection prevention and control measures in schools.

In total, about 14.5 thousand applications were registered in the NIS medical centres in 2020. The vast majority of applications were registered in the first quarter of the year when students studied offline. 129 applications were registered in the medical centre of the International School of Nur-Sultan during the IV quarter of 2020. They are students of offline learning classes.

Students complaints primarily indicated diseases of the respiratory system, digestive system, and nervous system, injuries, bruises, etc.

Preventive vaccination and medical examination of students

In the first half of 2020, about 7.6 thousand students were scheduled to undergo preventive medical examination, and 43% of them did it.

In the II half of 2020, more than 7.6 thousand students were to attend medical examination and by the reporting time 31.1% of them were examined.

During the reporting period, 2,7 thousand students were scheduled to receive X-ray screening and 83.2% of them received it.

According to the national preventive vaccination schedule, students are to be vaccinated against diphtheria, pertussis and tetanus, tuberculosis, measles, rubella and etc.

In 2020, 2.3 thousand students were scheduled to be vaccinated against diphtheria and over 59.7% of them received the vaccines. 1.2 thousand students were to take a test for tuberculin and 26.2% of them were examined. In addition, 382 NIS staff members and students from Almaty, Kostanay, Nur-Sultan, Pavlodar and Petropavlovsk were vaccinated against flu.

The main reasons for incomplete vaccination and preventive medical examination are the absence of students at schools due to the transition to distance learning, suspension PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

of these services by primary medical care institutions due to the restrictions and epidemiological situation because of COVID-19 and the refusal of legal representatives due to the risk of disease in crowded places.

Personal, social and health education in Intellectual schools

Health education and promotion of a healthy lifestyle is one of the core activities of school medical service. In this regard, NIS deliver lectures, trainings and seminars, produce videos, newsletters and etc.

According to the decision of the chief public health officer, school medical officers were to ensure compliance with public health requirements (temperature measurement with a non-contact thermometer, staff instruction, timely change of personal safety equipment, monitoring required storage of disinfectants and other measures). Also, school medical officers monitored compliance with public health requirements during final and international examinations, certificate awarding ceremony, competitive selection of Grade 7 students and other events.





One of the key health education activities during the reporting period was to explain the features of COVID-19, its difference from influenza and other acute respiratory infections, and preventive measures. In this regard, schools held office hours, delivered lectures for students and staff members, mailed out information to parents, instructed cleaning, food and dormitory service personnel about the cleaning and disinfection regime, ventilation and other public health requirements. In addition, school medical officers taught students to wash their hands properly and comply with respiratory hygiene etiquette.

Due to the transition to distance learning and increased use of devices, school medical officers made videos and other newsletters for students on visual gymnastics, correct sitting posture at a computer, prevention of myopia and scoliosis, hypodynamia and respiratory gymnastics.





Meanwhile, they proceeded to prevent socially significant diseases (tuberculosis, HIV/ AIDS). For example, NIS medical officers from Pavlodar met with students in MS Teams online and held a Q&A session as part of the World Mental Health Day (October 10, 2020).

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Intellectual schools of Karaganda, Aktobe, Uralsk, and Kostanay held activities to prevent injuries in winter by teaching students how to provide first aid for frostbite in the result of being outside at low temperatures and drowning under ice in rivers and reservoirs.

To improve the quality of medical services, NIS developed new laws and regulations and updated the existing ones.

NIS Student Wellbeing Projects

During the reporting period NIS experts developed tools for monitoring and preventing injuries in schools⁴. As part of this project,

• a tool for monitoring the injuries rate was developed and customised;

• this tool was tested in Intellectual school of Pavlodar and International school of Nur-Sultan;

• the monitoring tool was evaluated based on the test results;

In the period from August 26 to 28, 2020, National Public Health Centre delivered a training for teachers and medical officers of Intellectual schools and International school of Nur-Sultan on the prevention of student injuries.

In addition, the UN Population Fund (UNFPA) concluded a partnership agreement with NIS within the framework of a new country programme for 2021-2025 in terms of informing and training on reproductive health issues.

⁴ According to the Agreement on cooperation between Nazarbayev Intellectual Schools AEO and the UN Chidlren's Fund (UNICEF) N^oΔCPPΠ N^oPCA/KZ/2019/001/169 dated December 4, 2019

RESEARCH PROJECTS



NIS regularly strengthens its research capacity in the following areas:

• Coordination of research conducted in NIS and its affiliated branches;

• Presenting NIS experience and exchanging accumulated knowledge;

• Teacher research (see Chapter Teachers);

• Implementation of research in secondary education (see Part 2 of the Annual Report).

Coordination of research conducted in NIS and its affiliated branches

NIS regularly monitors ongoing research and surveys. So far, NIS have completed 41 studies and implements 21 research activities. In 2020, 16 projects were completed, 5 initiated are still in progress (Appendix – List of NIS research projects).

In 2020, NIS considered five applications from external researchers and two of them were approved.

Since 2020, NIS use the automated application process through the electronic portal research.nis.edu.kz.



In 2020, NIS developed a new website for its research activities research.nis.edu.kz. The website has two main features:

- automated application for research;
- NIS Research Catalogue.

The research catalogue represents NIS knowledge base that aggregates all reports and

other materials developed based on the results of research projects completed by NIS and its affiliated branches and their academic papers. This catalogue provides access to the **single source** of **valid data** from research findings.

The website users can access two versions of the catalogue – public and confidential which is available only for authorised employees of NIS and its affiliated branches.

The website also has documents regulating research activities in NIS and information about the NIS Scientific Advisory Committee (SAC).

In addition, the research website is used as the main platform for disseminating **quarterly digests**. In 2020, NIS issued four digests on the most urgent issues in education and NIS research:

• Participation of Kazakhstani teachers in the OECD Teaching and Learning International Survey (TALIS);

• 'Rural school' project - a study to create equal opportunities;

Personalised learning in Intellectual schools;

• Distance learning during the pandemic;

• Human Capital Index (World Bank, 2020): forecasts for Kazakhstani children;

• Back to the Future of Education: Four OECD Scenarios for Schooling (OECD, 2020);

• The impact of the COVID-19 pandemic on education: research review;

• The impact of adaptive learning on student performance;

• Secondary research results based on ICS;

• Research on the impact of the educational environment on student performance.

NIS research projects

In 2020, NIS regularly conducted research on the current trends in education in the framework of improving NIS activities.

It analysed the results of teachers who took part in TALIS international study. In March 2020, OECD published the International report: Volume II "Teachers and School Leaders as Valued Professionals". It primarily focuses on the prestige and status of the teaching profession, teacher's working conditions, professional interaction and collegiality, leadership and autonomy. The analysis results were presented at the NIS August Conference.

Due to the coronavirus pandemic and transition to distance learning, teachers and researchers started to analyse their

effectiveness and continuously improve their teaching practice in new realities. In 2020, NIS initiated a **two-cycle research on the implementation of distance learning** by conducting a survey of students, parents and teachers on the effectiveness of distance learning, quality of knowledge and general learning process satisfaction.

The first cycle took place in the 2019-2020 academic year. NIS analysed survey results of 2 200 teachers, 10 607 students and 9 340 parents. The research aimed to collect data on the implementation of distance learning, student and teacher adaptation to new learning conditions, and advantages and disadvantages of distance learning to make further management decisions and get ready for the next academic year.

The second cycle took place in Term 1, 2020-2021 academic year. At this stage, the research aimed to study qualitative changes in teacher's practice and the dynamics of evaluating the effectiveness of distance learning by respondents. NIS systemised all data collection tools and developed final report on research results. The report included the results of online survey of teachers (2 087),

students (9 697), parents (9 833), and school psychologists (56), analysis of MS Teams use in the learning process, and focus groups with teachers and observation of online lessons.

Based on the data obtained, NIS made a range of decisions to improve the quality of distance learning in the 2020-2021 academic year.

In March, 2020, NIS **analysed the quality of food in school canteens**. The study was conducted by interviewing NIS students and their parents to identify whether they were satisfied with food in school canteens and at home. The total number of respondents was 5 882 students and 5 583 parents from 18 Intellectual schools. Based on the survey results, it made a report outlining main conclusions and recommendations.

From January to May 2020, NIS studied the implementation of personalised learning in Intellectual schools. Qualitative data (focus groups and individual interviews with teachers, students and their parents) were collected in 10 Intellectual schools. Interviewers analysed the answers of 62 teachers, 61 students and 26 parents and observed 10 lessons. In addition, 13 school directors and 16 deputy directors participated in the survey.

Thus, the research studied advantages of the personlalised learning programme from the perspectives of students, their parents, teachers and school administration. Based on the data obtained, NIS provided an analysis of the personalised learning process, opportunities and risks.

NIS promotion and recognition

To increase the NIS recognition abroad and to provide free access to high quality and informative content for the Kazakhstani audience NIS launched **Intellectual Podcast** with the Conference speakers.



| Первым гостем подкаста Интеллектуальных школ Intellectual Podcast стал Андреас Шляйхер, Руководитель Департамента по образованию и навыкам ОЭСР. |
|---|
| Уважаемые перагоги, коллеги, друзие! |
| Как вы знаете, в 2020 году, ввиду непредвиденных обстоятельств, мы были выпуждены отменить проведение нашей ежегодной Международной научно-практической Конференции на тему «Семья, |
| шнола и сообщество: думаем и действуем в интересах ребенкая. |
| Мы энсен, с каким интересом казахстанская экспертная |
| общественность, наши педагоги и горубажные коллеги ждут нашей, екегодной встречи для обсуждения актуальных вопросов |
| образования. Однако, проведение Конференции, даже в виртуальном |
| формате, было сопрежено со множеством рисков. Проанализировав |
| эти риски, мы посчитали, что наиболее ответственным шагом с |

нашей староны будет атменить Конференцию в этом воду. Тем не менее, как и обещали, мы не остовим вос без полезного контента.

мами запланирован релиз серии видео-подкастав вплетестиа Podcasta са спикерами Конференции и казакстанскими экспертоми сферы образования. The first speaker - **Andreas Schleicher**, Head of the OECD Directorate for Education and Skills.

In his podcast "Education disrupted – education rethought" Andreas Schleicher tells about the impact of the pandemic on education worldwide and in Kazakhstan, new risks and opportunities. In addition, the podcast focusses on the prospects for the development of technology in education, ethics and values that significantly changed and will not be the same.

The next speaker - **Darius Radkevicius**, Member of the Vilnius City Council, Education and Culture Committee, expert of the European Bank for Reconstruction and Development (Lithuania). The podcast "School as the Heart of the Community" starts with the historical overview of the main ideas of education and their relationship with economic, social and cultural changes in people's lives. Darius Radkevicius demonstrates that the teaching methodology, architecture and art are closely interrelated. He uses examples of real schools to show why nature and aesthetics play a significant role in student learning.

Andy Cope, expert in employee engagement, well-being and human flourishing (UK), Dr. Happiness, in his podcast argues that working in education can be physically and emotionally exhausting and that is why everyone is responsible for own emotions and well-being. Dr.Happiness talks about how to rediscover the meaning of life and find happiness by changing the way you think, which cascades through your emotions, behaviour and life.

Dominic Wyse, professor of Early Childhood and Primary Education at University College London (UCL), President of the British Educational Research Association, spoke on the topic "The Teaching Instinct: Effective Pedagogy for Young children in Homes and Schools" and highlighted 12 principles for pedagogy.

Andrew Hargreaves, Research Professor of the Lynch School of Education at Boston College, OECD and World Bank consultant, in his podcast shared six lessons from the pandemic for education that should be considered when planning further activities.

In 2021, NIS plans to continue the production of video podcasts with international and Kazakhstani experts.

Research publications

To ensure wide recognition in academia, NIS continues to publish papers based on research results. In 2020, two scientific papers were published in impact factor journals.

As a result of collaboration with the Higher School of Economics (Russian Federation), NIS published an article "Teacher professional development in Russia and Kazakhstan: Evidence from TALIS-2018" in "Educational Studies" journal (Y.Chernobay, D. Tashibayeva).

In addition, staff members of the NIS AEO and Centre for Pedagogical Measurements published an article "Updated content of education in Kazakhstan: Longitudinal trajectories of learning performance in Mathematics and Science" in the Journal of Education and Human Development (JEHD) in collaboration with D. Dimitrov, Honorary Professor of the Department of Measurement Ouantitative Research Methods and Education, Graduate School of Education, George Mason University (Virginia, USA) (D. Dimitrov, O. Mozhayeva, A. Shilibekova, D. Ziyedenova, Z. Rakhymbayeva).

The article "Backstage: distance learning in Nazarbayev Intellectual Schools" by Research Department staff members (K. Sailau, A. Ramazanova) published in "KazNU Vestnik" journal shared the results of research of distance learning in Intellectual schools in Term 4 of the 2019-2020 academic year.

Three articles on the research results were published in "Pedagogical Dialogue" journal. These are "Social and emotional skills are the foundation of success" (D. Tashibayeva), "Reflections changes education on in systems" in the Kazakh and English languages based of the study "Dissemination and continuity educational innovations of secondary education of Kazakhstan" in (C. McLaughlin, N. Ayubayeva, O. Fimyar, J.Helmer, K.Malone, N. Yakavets, K. Tursunbayeva, L. Winter, L. Abdimanapova, Z. Khamidullina, Zh. Zhontayeva). Based on the Rural School Project findings, S. Ispussinova, Deputy Chairperson of the Board, and A. Kopeyeva, Deputy director of Research Department, published the article "School climate: the voices of students, parents and teachers".



QUALITY ASSURANCE



Student performance monitoring



Criteria-based assessment



External summative assessment in Grades 5 and 10-12



Accreditation of Intellectual Schools



NIS Programme and NIS Certificate recognition

5.1. Student performance monitoring

Monitoring of the NIS student performance is a systematic process of evaluating, collecting, processing and providing objective information about the level of student knowledge. It helps track student progress in achieving the programme objectives, adjust their individual learning trajectory and provide pedagogical support to each student.

In the current epidemiological situation, UNESCO highlights the need for monitoring student performance to timely identify possible gaps in their knowledge and skills. In 2020, NIS carried out the following monitoring procedures:

 monitoring of student performance in Mathematics;

monitoring to identify gaps in student knowledge and skills in the context of distance learning;

• testing functional literacy of 14-year-old students

Monitoring of student performance in Mathematics

In 2020, NIS monitored performance of Grade 7-11 students in 19 Intellectual schools in the following five units of Mathematics

Diagrams. Monitoring results: January 2020 vs. September 2019

programme: Numbers, Algebra, Geometry, Statistics and Probability theory, Mathematical modeling and Analysis.

Based on the monitoring results, NIS held a training workshop to discuss the monitoring results, establish assessment standards and describe the levels of student performance.

In total, 11 035 Grade 7-11 students took part in the monitoring, including: 2 844 students of Grade 7, 2 079 students of Grade 8, 1 564 - of Grade 9, 2 439 - of Grade 10 and 2 109 - of Grade 11.

The students' responses were statistically processed and analysed in terms of psychometrics. Students and stakeholders were provided with:

43 311 individual detailed reports;

• 43 311 individual reports on learning dynamics;

• 722 detailed reports with data across classes;

 analytical report with data relevant to all Intellectual schools.

The monitoring results exemplified by Grade 7 and 8 data are given below in the context of four levels of students' academic performance.



Beginner Elementary Good High

A comparative analysis of the monitoring results (September 2019 and January 2020) revealed increased number of students demonstrating "Good" and "High" levels of academic performance in the context of the following programme units:

 Grade 7 - Mathematical modeling and Analysis;

Grade 8 – Algebra and Geometry;

 Grade 9 - Algebra, Geometry, Statistics and Probability theory;

Grade 10 - Statistics and Probability • theory;

Grade 11 - Geometry, Mathematical modelling and Analysis.

Test tasks are annually developed and piloted to enrich the task bank. In the reporting period, 200 tasks were developed and reviewed.

NIS held an online seminar to discuss the review results and finalise the test tasks.

Monitoring to identify gaps in student knowledge and skills in the context of distance learning

NIS decided to develop and conduct an alternative type of monitoring to timely identify the gaps in student knowledge and skills due to the transition to distance learning.

In this regard, NIS employees developed the monitoring methodology, set up a server to

provide remote access to the test platform for 14 929 students, reviewed 2 782 new tasks, provided methodological support to school administration, conducted online consultations and gave instructions on the monitoring management.

The monitoring was held in the beginning of the 2020-2021 academic year for Grade 7-12 students of 20 Intellectual schools in the context of 13 subjects.

Table. The structure of the monitoring to identify gaps in student knowledge and skills in the context of distance learning

| No | Subjects | Grade | | | | | | |
|-----|--------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| NO. | | 7 | 8 | PL M1* | 9 | 10 | 11 | 12 |
| 1 | Mathematics | | | | | | | |
| 2 | Kazakh language and literature (FL) | \bigotimes | | | | | | |
| З | Kazakh language and literature (SL) | | | V | | | | X |
| 4 | Russian language and literature (FL) | \bigotimes | | | | | | |
| 5 | Russian language and literature (SL) | | V | V | | | | \mathbf{X} |
| 6 | English | | | | | | \bigotimes | |
| 7 | History of Kazakhstan | | | 8 | | | | |
| 8 | Kazakhstan in the modern world | \bigotimes | \bigotimes | \bigotimes | \bigotimes | \bigotimes | \bigotimes | |
| 9 | Physics | | | V | | | | |
| 10 | Chemistry | \bigotimes | | | | | | |
| 11 | Biology | 8 | | V | | | | |
| 12 | Computer science | \bigotimes | \bigotimes | \bigotimes | \bigotimes | | \bigotimes | |
| 13 | Geography | | | \bigotimes | X | X | × | |

*PL M1 - students enrolled in personalised learning programme (Model 1)

The monitoring results in the context of subjects, grades and completion percentage are presented in the table below.

| Table. | Completion | percentage |
|--------|------------|------------|
|--------|------------|------------|

| No | Subject | Grade | | | | | | |
|----|--------------------------------------|-------|------|--------|------|------|------|------|
| NO | Subject | 7 | 8 | PL M1* | 9 | 10 | 11 | 12 |
| 1 | Mathematics | 73.0 | 60.4 | 56.0 | 53.0 | 50.2 | 57.0 | 72.9 |
| 2 | Kazakh language and literature (FL) | | 70.0 | 86.5 | 70.1 | 72.0 | 79.0 | 55.4 |
| З | Kazakh language and literature (SL) | 56.0 | 56.5 | 72.0 | 56.0 | 56.7 | 48.9 | |
| 4 | Russian language and literature (FL) | | 75.4 | 76.7 | 77.0 | 69.6 | 71.3 | 72.3 |
| 5 | Russian language and literature (SL) | 68.7 | 77.5 | 79.0 | 74.8 | 81.0 | 83.7 | |
| 6 | English | 67.9 | 60.8 | 73.0 | 58.3 | 62.0 | | |
| 7 | History of Kazakhstan | | | | | 67.8 | | |
| 8 | Kazakhstan in the modern world | | | | | | | 79.2 |
| 9 | Physics | | 52.0 | 52.7 | 51.9 | 59.5 | 54.1 | 59.5 |
| 10 | Chemistry | | 72.0 | 54.1 | 58.0 | 61.9 | 58.0 | 66.8 |
| 11 | Biology | | 56.4 | 66.7 | 56.2 | 63.0 | 56.7 | 76.8 |

| No | Cubicat | | | | Grade | | | |
|----|------------------|---|---|--------|-------|------|----|------|
| NO | Subject | 7 | 8 | PL M1* | 9 | 10 | 11 | 12 |
| 12 | Computer science | - | | | | 58.5 | | 78.8 |
| 13 | Geography | | | | | | | 78.5 |

^{*}PL M1 - students enrolled in personalised learning programme (Model 1)

The students' responses were statistically processed and analysed in terms of psychometrics. Students and stakeholders were provided with:

- 228 113 individual detailed reports;
- 1 007 detailed reports across classes.

Testing to assess functional literacy of 14-year-old students

To track and develop functional literacy of students in terms of knowledge and skill extrapolation to everyday life situations, NIS developed a test methodology for 14-year-old students in three areas: Mathematics, Science and Reading.

The methodology was developed based on PISA (OECD) international study.

500 tasks were developed and reviewed to test student functional literacy in different contexts.

Science Literacy Question

The graph below shows the plastic concentration in the Garbage Patch (Within GPGP) and around the Garbage Patch (Around GPGP). You may observe an exponential increase of the microplastics concentration in the Garbage Patch every decade.

Name the dependent variable in the graph above.



Mathematical Literacy Question

Aidos painted over hexagons in three honeycombs following a certain pattern, in blue and yellow, as shown in the picture. Aidos continued to paint over the honeycombs adhering to this pattern. Determine the colour of hexagons that will prevail in the honeycombs with the ordinal number 2021.



The test was conducted twice for the same sample of students. It allowed studying trend changes in the levels of functional literacy:

- in April 2020 2 070 students;
- in November 2020 1 974 students.

Diagram. Average completion percentage across three areas in contrast



Students' responses were statistically processed. As a result, students and stakeholders were provided with:

- 11 943 individual detailed reports;
- 168 detailed reports across classes.

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NIS also held a series of webinars to explain the test structure, classification of assessment tools, and their application in teaching and learning.

In addition, after passing the test, teachers and students get an access to the online simulator for learning and teaching purposes.

Symposium: CEFR-based Assessment Standards in teaching English

Symposium on setting the assessment standards in accordance with the CEFR levels in "Kazakh as L2", "Russian as L2", "English" is the final stage in the development of the monitoring system by NIS and its strategic partner, Cito Institute for Education Measurement (the Netherlands).

In February 2020, Cito hosted a symposium in Arnhem (the Netherlands) to establish assessment standards in English (Reading, Listening, Speaking and Writing) jointly with experts from the Netherlands and Kazakhstan.

An international group of independent experts confirmed that the test tasks were developed in accordance with the testology requirements considering cognitive abilities of students aged 12 to 18 and the CEFR descriptors for levels A1 to C1.



Next year, NIS plans to hold a symposium on setting the CEFR-based assessment standards in "Kazakh as L2", "Russian as L2" in Nur-Sultan and invite independent international experts in these languages.

5.2. Criteria-based assessment

Due to distance learning, criteria-based assessment of student performance was adapted to new conditions. In this regard, NIS provided methodological and consulting support to teachers, revised procedures for formative and summative assessment, and developed the following instructions and guidelines:

• norms regulating formative and summative assessment of NIS students in the context of distance learning as part of the Education Rules;

• recommendations for formative and summative assessment (using MS Teams);

• 377 Summative Assessment Specifications that suggest reducing the content, time and work conditions;

• Summative Assessment Specifications for Term 4, Grades 5, 10, 11 in subjects where the external summative assessment exams were canceled;

• consulting platforms for assessment coordinators on MS Teams;

• additional links to websites with audio recordings for listening practice in language subjects.

It should be noted that in distance learning, the role of formative assessment and feedback has increased. It is confirmed by student results in Term 4, 2019-2020 academic year (see Chapter 6. Students' academic performance).

In the 2020-2021 academic year, the revised criteria-based assessment system was introduced in all grades of Intellectual schools as scheduled.

According to the planned activities, NIS developed and updated methodological recommendations for student assessment across subjects, classes and languages of instruction:

 methodological recommendations for summative assessment for unit for Grade 12 subjects (17 documents);

 Summative Assessment Specifications for Term across subjects in Grades 1-4, 7 and 12 (54 documents);

 Summative Assessment Specifications for personalised subject programmes (43 documents).

5.3. External summative assessment in Grades 5 and 10–12

The World Bank (2020) noted that in the context of distance learning, the education system around the world faced the challenge in assessment of student knowledge and exam administration. A global express analysis conducted by UNESCO in April 2020 showed that countries had used different methods to

solve the problem: 22 of them conducted exams, 58 - postponed exams, 11 - cancelled exams, 23 - introduced alternative methods such as online exams or remote testing.

At the end of Grade 12, NIS students take an external summative assessment (hereinafter - SA) to receive the Certificate of Cambridge Assessment International Education (hereinafter - CAIE).

Considering the importance of the Certificate and the current epidemiological situation, CAIE decided to award the 2020 graduates in all countries with Certificates without AS/A-Level exams. It is still compatible with the Certificate of graduates of previous years and provides NIS graduates with an opportunity to study at the universities in Kazakhstan and abroad.

In this regard, CAIE developed a SA model based on a wide range of evidence indicating students' performance and professional judgement of teachers. This model is unique and used for the first time. Four stages of data collection and processing ensured the compatibility of the current student grades with the preceding ones, reliability and objectivity of assessment, and academic integrity.

Figure. CAIE External Summative Assessment Model



In general, 2020 SA results are compatible with the results of 2019.

According to the 2020 SA results, 112 students received Grades A* and A ('Excellent) and 995 – Grades A*, A ('Excellent) and B, C

(Good). 112 candidates confirmed the Altyn belgi award, and 214 - honour certificate.

Student results across subjects and aggregated grades in letters are given below.



Diagram. Grade 12 student results

NIS has developed and piloted proctoring system to enable students to take the UNT online.

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This system has been successfully used by 106 candidates ensuring confidentiality of the exam procedure. It made possible to track the progress of each student online.

5.4. Accreditation of Intellectual Schools

In 2020, 5 Nazarbayev Intellectual Schools of Taldykorgan, Uralsk, Pavlodar, Karaganda and Taraz developed and submitted the First Interim Report on school progress to the Council of International Schools (CIS) after receiving International Accreditation (FRPP). This report is obligatory prior to the next cycle of international accreditation.

Intellectual Schools received a positive feedback from CIS experts. Having analysed the evaluation reports, they approved the fact that NIS maintained high international accreditation standards and continued to improve existing practice.

International School of Nur-Sultan is being accredited and getting ready for Preparatory Evaluation in terms of the second visit in the accreditation cycle. Due to the pandemic, the visit will be held online. International School of Nur-Sultan is being evaluated against updated international accreditation standards. All reports are made in an electronic form on WeaveEducation platform.

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| The school uses the Essential Questions to infor | m its investigation and support the gathering | of evidence and self-evaluation against the Standards in the Domain | | |
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| Status | Narrative | Team Members (8) | No popular evidence yet - Team members should go vote. | |
| Not Started | 0 words | ******** | | |
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Figure. Interface of WeaveEducation platform

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As part of the cooperation with CIS, the NIS management team took part in annual CIS School and University Summit. The Summit is a platform for discussing topical issues in international education and ongoing changes. Representatives of 10 schools and 10 universities from all over the world took part in the Summit.

Also, CIS annually hosts the Global Forum on International Admission to bring together more than 500 best universities from 20 countries.

In 2020, due to the coronavirus pandemic, this event was held online on a special platform. In view of the international recognition of NIS Grade 12 Certificate and gaining access to the best world universities, NIS team took part in the Forum on November 17-19, 2020. The Forum programme included presentations by leading educational organisations, schools, universities and colleges on recognition and interactive virtual platforms to ensure interaction between schools and universities.

PART 1

5.5. NIS Programme and NIS Certificate recognition

A number of events were held in 2020 to further work on the recognition of NIS Grade 12 Certificate. It was agreed that the following HEIs of Kazakhstan would accept NIS graduates to reduced undergraduate programmes:

- University of International Business,
- Turan University,

– Atyrau Oil and Gas University named after Safi Utebayev,

– Academy of Civil Aviation.



NIS graduates accepted to reduced undergraguate programmes

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Thus, 17 universities recognise the academic results of NIS graduates.

More than half (52%) of 2170 graduates of the 2019-2020 year successfully joined these universities.

As part of the collaboration with international universities, in the reporting

period, NIS signed a memorandum with Tokyo International University which is currently one of the best research universities in Japan.

It should be noted that the university committed to offer tuition-free scholarships to two best NIS graduates annually.



NIS graduates accepted to international universities

In addition, NIS attended the annual conference of the Association for International CredentialEvaluationProfessionalsanddelivered a speech on Innovative Secondary Education in Kazakhstan: Nazarbayev Intellectual Schools perspectives. The conference was held online. The theme was "Inclusive, Digital, Accessible".

It should be noted that:

17 universities of Kazakhstan offer an accelerated 3-year undergraduate programmes;

• 7 universities of Kazakhstan transfer graduates' school grades into academic credits in a number of subjects;

• 10 international universities accept NIS graduates for the 1st year without Foundation.

• 4 international organisations (UK NARIC, Kultusministerkonferenz, NUFFIC, Swiss Education Group) recognise NIS-Programme and NIS Grade 12 Certificate;

• 2 international databases include NIS Grade 12 Certificate.



STUDENTS' ACHIEVEMENTS



Performance and quality of knowledge



International and national Olympiads, contests, conferences and research work



International examinations results



University admissions


6.1. Performance and quality of knowledge

At the end of the 2019-2020 academic year, 14785 students studied at the Intellectual Schools, including: 9 382 (63.5%) students studying in Kazakh and 5 403 (36.5%) students studying in Russian.

According to the results of the 2019-2020 academic year, student performance was 100% and knowledge quality – 95.0%.

The analysis in the context of instruction language shows that the performance of students studying in Kazakh is 2.6% higher than that of students studying in Russian.

In the context of school stages, the quality of student knowledge in primary school is 90%, secondary school - 70% and high school - 80%.

Diagram. The quality of NIS student knowledge across schools (2019-20 academic year), %



The analysis of data for four terms indicates a growth trend in the quality of NIS student knowledge (by the end of the academic year it increased by 24.6%). It is primarily due to the efforts made to ensure an equal access to quality education, adapted assessment and additional resources in the context of distance learning.





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In the 2019-2020 academic year, **267** students of Grade 10 received high school certificates with honours (10.3%). **224** students of Grade 12 were candidates for High School Certificate with honours and **224 (100%)** of them were awarded with the certificates. 112 (100%) candidates confirmed the Altyn Belgi award.

6.2. International and national Olympiads, contests, conferences and research work

One of the indicators of quality knowledge is high results of students in Olympiads, contests, and competitions at different levels.



At the beginning of each academic year, NIS hosts a traditional Olympiad in general **education** subjects equated to the regional stage of the Republican Olympiad.

In 2020, the Olympiad took place in Intellectual Schools of Nur-Sultan (IB), Almaty (ChB), and Shymkent (PhM).





695 students participated in the Olympiad, and 219 of them took top places. Intellectual Schools of Almaty (PhM) and Pavlodar were recognised to be the best Olympic teams.

| | Olym | ipiads | Science Co Innovati | nce Competitions and Total Total | | | |
|------------------|-------|--------|------------------------|----------------------------------|-------|-------|-------|
| | KAZ | INT | KAZ | INT | KAZ | INT | Total |
| participants | 1 868 | 1 190 | 494 | 461 | 2 362 | 1 651 | 4 013 |
| prize winners | 1 445 | 860 | 390 | 372 | 1 835 | 1 232 | 3 067 |

Table. Number of students participating in olympiads, competitions and contests

Students took part in the following prestigious international subject Olympiads and project competitions:

• International Zhautykov Olympiad in Mathematics, Physics, Computer Science;

• International "Silk Road" Mathematical Olympiad;

• International Asia-Pacific Mathematical Olympiad;

• International Competition in Mathematics and Design;

• International Space Research Competitions "Discovering the World of Science";

• 54th International Mendeleev Olympiad in Chemistry;

• International Physics Olympiad (IPhO);

International "Tuimaada" Olympiad;

• International Olympiad in Geography of Central, Southern, and Southeastern Europe;

 International Chemistry Olympiad (ICHO);

• International Mathematical Olympiad (IMO);

• International Balkan Mathematical Olympiad (BMO);

• International competition for research projects "Young Scientist";

• International Biology Olympiad (IBO).





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Teachers, graduates and students of Intellectual Schools of Almaty (PhM), Pavlodar, Nur-Sultan (PhM), and Taldykorgan became laureates of El Maqtanyshy Award for their achievements in international Olympiads in chemistry and mathematics:

Assylbek Orazbay (Chemistry teacher, NIS ChB Pavlodar);

Nursultan Khadzhimuratov (Mathematics teacher, NIS PhM Almaty);

Tair Satubaldin (student, NIS PhM Almaty);

Tamirlan Bektemissov (student, NIS PhM Almaty);

Abilmansur Muzhubayev (graduate, NIS PhM Nur-Sultan);

Kairbek Khaidar (student, NIS ChB Pavlodar);

Anton Morgunov (graduate, NIS PhM Taldykorgan.

In 2020, there were changes made to the Olympiads, competitions and trainings.

In the reporting period, NIS held online trainings for students of Grades 7-8 and 9-12 involving national and international coaches, including NIS graduates - former prize winners of international and national Olympiads.

Another significant event held online was a network Research Project Competition. It is one of the stages of the Republican Research Project Competition. In 2020, for the first time, the competition was held online on MS Teams.

270 students from all Intellectual Schools presented 200 projects in 4 areas:

• "Scientific and technological progress as a key element of economic growth",

• "Mathematical modeling of economic and social processes",

• "Healthy environment is a basis for the implementation of the strategy "Kazakhstan-2020",

• "Historical monuments of Kazakhstan and Prospective Tourist Routes".

131 authors of 95 projects won prizes: 1st place – 28 students with 21 projects, 2nd place – 42 students with 28 projects and 3rd place – 61 students with 45 projects.

Intellectual School of Kyzylorda was recognised to be the best team of the Research Project Competition in 2020.

Research project activities are an obligatory component of the Intellectual Schools educational activities. Therefore, a network competition of research projects has become a tradition and valuable experience for young researchers.

In 2020, NIS held 256 meetings with wellknown scientists, doctors, athletes and workers of culture.

6.3 International examinations results

To determine the level of English proficiency, high school students annually take the international IELTS exam, which is an external assessment in English. In 2020, 2 306 students of Grades 12 from 20 Intellectual Schools passed IELTS. For the first time, the exam was computer based. The average IELTS score across NIS schools was 6.7, which is 0.2 higher than in 2019.

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Note:

Analysis of IELTS records across different countries shows that the average score in Kazakhstan is 6.1 and the average score in the world is 6.2. Meanwhile, the average score of the Intellectual schools exceeds the average score of such countries as Turkey (6.3), Korea (6.0), China (5.8), Japan (5.8), Saudi Arabia (5.4), the United Arab Emirates (5.1), France and Russia (source www.ielts.org).

Table. IELTS Results

| No. | School | Number of students | Average score |
|-----|-----------------|--------------------|---------------|
| 1 | Aktau | 105 | 6,4 |
| 2 | Pavlodar | 101 | 6,8 |
| З | Taldykorgan | 67 | 6,7 |
| 4 | Kokshetau | 62 | 6,7 |
| 5 | Petropavlovsk | 129 | 6,3 |
| 6 | Aktobe | 113 | 6,8 |
| 7 | Almaty PhM | 141 | 7,2 |
| 8 | Semey | 111 | 6,7 |
| 9 | Almaty ChB | 136 | 6,8 |
| 10 | Taraz | 119 | 6,9 |
| 11 | Atyrau | 112 | 6,3 |
| 12 | Oral | 112 | 6,7 |
| 13 | Ust-Kamenogorsk | 100 | 6,8 |
| 14 | Karaganda | 130 | 6,8 |
| 15 | Kostanay | 125 | 6,5 |
| 16 | Shymkent PhM | 94 | 6,5 |
| 17 | Kyzylorda | 95 | 6,4 |
| 18 | Shymkent ChB | 92 | 6,5 |
| 19 | Nur-Sultan IB | 165 | 7,2 |
| 20 | Nur-Sultan PhM | 197 | 6,8 |
| | TOTAL | 2306 | 6,7 |

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In recent years, Intellectual schools demonstrate a steady growth trend in the average IELTS score.



Diagram. Average IELTS score across years

According to the results of 2020, 70.2% of NIS students scored at least 6.5 and 48.6% - at least 7.0.

Note:

The analysis of IELTS results across 40 countries showed that only 16% scored more than 6.5 and 7.



The analysis of IELTS results showed that the average score in four language skills had improved over the years.



7 students of 6 Intellectual schools received **8.5 band score**:

Almaty PhM - Anel Saduova, Kostanay - Zhandos Shegenov, Nur-Sultan PhM - Aidarkhan Alikbayev, Nur-Sultan - Nesipbay Khadiya, Maksat Anuarbekov

Semey – Assanali Sultanbekov, Ust-Kamenogorsk – Diana Nurkassova.

It should be noted that six of them showed the highest score (9.0) in Listening, and five of them - in Reading.

Scholastic Assessment Test (SAT)

NIS students annually take the international SAT Reasoning Test (SAT 1) and SAT Subject Test (SAT 2) on a voluntary basis.

The test results are required for admission to certain higher education institutions.

SAT 1 includes tests in such subjects as Mathematics, Evidence-based reading, and Writing and the maximum score is 1600. In SAT 2, the maximum score is 800 in each selected subject.

In 2019-2020, 39% of Grade 12 students (847) took SAT 1. The average score across 20 Intellectual schools is 1334.

NIS students scored higher than 89% of students worldwide.

8% of students (65 out of 824) scored 1450 and higher. Only 4% of students in the world have the same score.

475 of 847 students scored 1240 and higher which is sufficient for admission to Nazarbayev University undergraduate programmes and **10 students scored 1520 and higher which is enough to apply to the top 10 world universities.**

In the 2019-2020 academic year, 291 NIS students took **SAT 2** in such subjects as Mathematics 1, Mathematics 2 (Advanced), Physics, Chemistry and Biology. Diagram. Average SAT 2 score across subjects



19 NIS graduates scored the highest (800) in two and more SAT subjects. To sum up, NIS students demonstrated a high level of knowledge in Science, Mathematics and English.

6.4. University admissions

In the 2019-2020 academic year, 2 170 NIS graduates enrolled in different national and international universities. 92.8% of NIS graduates (2 015) received tuition-free scholarships (1651 graduates – in Kazakhstan, and 364 – abroad).

Diagram. Admission of graduates



The most popular higher educational institutions of Kazakhstan among NIS 2020 graduates are Nazarbayev University, Kazakh British Technical University (KBTU), Astana IT University, Suleyman Demirel University (SDU), Al-Farabi Kazakh National University and Asfendiyarov Kazakh National Medical University.



Diagram. Student distribution across Kazakhstani universities

20% (427) of 2019-2020 graduates enrolled in different international universities. 85% (364) of graduates won tuition-free scholarships.

34 graduates enrolled at QS Top-50 universities and 15 graduates – in QS Top-100 universities. 3 graduates enrolled at the Ivy League universities (USA):

 Sultanali Nurmanuly, a graduate of NIS PhM Almaty, enrolled at Harvard University.

- Ardana Izimova, a graduate of NIS PhM Almaty, enrolled at the University of Pennsylvania.
- Adelina Yelemessova, a graduate of the Intellectual School of Nur-Sultan, was admitted to Columbia University.

The majority of NIS graduates entered the universities of Russia, Hungary, Italy, Germany, South Korea, USA, China and Canada.



Diagram. The most popular countries among NIS graduates

Note:

2010 to 2020, 12 graduates entered the Ivy League universities (USA) and 354 graduates entered QS Top-100 universities (267 received tuition-free scholarships).

Career guidance

In the reporting period, an online a training seminar was held to further improve career guidance activities and to provide methodological support to NIS career guidance consultants. 12 sessions were delivered jointly with the representatives of Nazarbayev University, Centre for International Programmes JSC, Nepusti.net and Joo.kz.

In addition, Cambridge University graduate, currently a graduate student of Oxford University, shared his own experience of admission to the best world university and gave useful recommendations on how to successfully prepare for admission.

Head of the Department of International Affairs, Charleston College, one of the oldest in the USA, told about the scholarship for applicants from Central Asia.

To get information about scholarships, fellowships and admission procedure, staff members of the NIS Central Office and the Intellectual School of Ust-Kamenogorsk attended the annual CIS Global Forum on International Admission and Guidance (see Chapter 5). Based on the results of participation, NIS began the work on establishing cooperation with universities to recognise the results of graduates of Intellectual Schools.

Another significant event in 2020 was the development and launch of the online career guidance platform of Nazarbayev Intellectual Schools http://schoolcounseling.nis.edu.kz/. This platform will help learn and download up-to-date and reliable information and materials, exchange experience and thoughts. Students will be able to sign up for career guidance consultation online.



Figure. Interface of the online career guidance platform

Copyright (certificates) holders

Asem Khassylbekova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright certificate No. 9848 dated May 6, 2020 for the object "Excellent properties of the watercress and its use in space exploration". The novelty of the project is confirmed by the copyright department of the National Institute of Intellectual Property of Kazakhstan. The author explored the properties of the watercress, or the garden peppergrass (Lepidium sativum), an annual herb of the Brassicaceae, determined the nutritional value, and proved the nutritional value of the watercress experimentally.

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Leyla Zhuruntayeva, a student of Nazarbayev Intellectual School of Physics and Mathematics in Aktobe, inventor's certificate No. 7561 dated January 16, 2020 for the copyright object: Computer programme "Automation of accounting of the Condominium funds". The invention aimed to provide a platform for convenient use by the residents, chairperson and accountant of the condominium. The current version of the programme performs the following main functions: displaying utility bills, displaying tariffs, adding information about residents' accounts, changing tariffs. The invention relates to the field of automation of household processes, automation of indications of utilities.

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Aziza Kireyeva, Adelya Isseyeva, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright for the object of scientific work "English grammar and laws of physics", certificate No. 7649 dated January 21, 2020. The authors investigated the possibility of learning English in integration with content knowledge, in particular, with physics: they propose the study of some tense forms of English verbs in the process of exploring physical

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phenomena (types of mechanical movements). Finding the links between the tense forms of the verb in English and the laws of physics helps to find the common fields, improve the memorisation of the verb tenses, use physical terms in English, helps to systematise the use of the verb forms. This invention promotes the study of academic English in physics.



Kseniya Klokova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright for the work of science No. 7700 dated January 23, 2020 on the object "Biotechnology of a fermented milk product based on Tibetan milk mushroom". The author has developed the biotechnology of producing a fermented milk drink based on the Tibetan milk mushroom. The introduction of this technology into production will expand the range of fermented milk products so that all age groups can consume this drink, since the activity of the Tibetan milk mushroom changes the structure of the main components of milk, improving its digestibility.

Irina Yakupova, Diana Smagulova, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright for the design work No. 7709 dated January 23, 2020 for the object "Concept of a space hotel". The authors of the project consider the possibility of developing space tourism as a special tourism industry, its specifics, aspects of formation and development in our country.

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Appendices

ANNUAL REPORT

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Register of Copyright Objects No. 8595 dated February 13, 2020 for the object "Audiovisual work "The process of flower growth". The author presents animation video "The process of flower growth" in the Kazakh language. This video can be used as a digital educational video resource for Biology in studying growth of plants. The video demonstrates the process of plant growth. The author made the details and components of the animation from available materials (plasticine, cardboard, office paper, markers).

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Torezhan Nassigazin, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, copyright certificate of entering information into the State Register of Copyright Objects No. 9095 dated April 01, 2020 for the object "Website http:// altuntay.kz/". The scope of the website is the sphere of national tourism. A website is intended for Internet users from different countries and regions of the Republic of Kazakhstan to find information on the scientific, educational and tourist route "Altyn Tau" in the East Kazakhstan region. The website was developed in 2019 in the result of the regional research expedition of NIS students "Tugan elge tagzym".



Bek Kadessov, Alisher Rymkan, students of Nazarbayev Intellectual School of Physics and Mathematics in Semey, copyright for the work of science No. 7956 dated February 05, 2020 for the object "Investigation of the structure of gold nanoparticles for use in oncotherapy". The authors carried out this scientific research project work in order to find an alternative to conventional means of chemotherapy and radiotherapy in the treatment of cancer patients. Spherical gold nanoparticles were obtained as a result of a series of experiments and used for medical purposes. To achieve this goal, various stabilisers, methods of obtaining and detecting gold nanoparticles were investigated in the laboratories of the Shakarim State University in Semey, Serikbayev EKSTU in Ust-Kamenogorsk and Nazarbayev Intellectual School of Physics and Mathematics in Semey. To explore the structure of gold nanoparticles, the authors carried out experiments using spectrometry and transmission electron microscopy to identify the morphology of gold nanoparticles and their size. The use of gold nanoparticles was demonstrated with the help of computer simulation.

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Bek Kadessov, Alisher Rymkan, students of Nazarbayev Intellectual School of Physics and Mathematics in Semey, copyright for the work of science No. 7956 dated February 05, 2020 for the object "Photographs of gold nanoparticles made with the transmission electron microscope JEM 2100". The authors of the work received this certificate for the photographs of gold nanoparticles obtained in the result of transmission electron microscopy.

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Baurzhan Apil, Yersultan Tursyn, students of Nazarbayev Intellectual School of Physics and Mathematics in Taraz, copyright certificate for the work of science No. 7622 dated January 20, 2020 for the object "Viability of the Sandyk-Karakystak tourist route". This project research work provides information on the tourist resources of the Sandyk plateau and Karakystak gorge. As a result of studying the Sandyk plateau and the Karakystak area, the authors described characteristics and conducted biological-ecological and psychologicalaesthetic assessment of the naturalgeographical zone of this region, determined the location of the balbals, made a tourist route using the Geotracker application. Mapped out historical and natural sites. They made a video about the resources and opportunities of the Sandyk plateau and the Karakystak area.



Nazarbayev Intellectual School of Physics and Mathematics in Taraz, copyright certificate for the work of science No. 7631 dated January 21,

2020 for the object "Production of magnetic powder based on cobalt (II) ferrite from waste of Imstalcon Zhambyl Steel Plant LLP". Methods for obtaining cobalt (II) ferrite from steel shavings in the laboratory and in production were developed for the first time.

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Alizhan Sholpanbekov, a student of Nazarbayev Intellectual School of Physics and Mathematics in Taraz, copyright certificate for the work of science No. 7635 dated January 21, 2020 for the object "Autonomous animal monitoring device based on the LoRa modulation method". The author has developed the first animal monitoring device in Kazakhstan charging from the animal's movement. It does not require the mobile connection to transmit data on the animal's location.



Baurzhan Apil, Yersultan Tursyn, Grade 11 students of Nazarbayev Intellectual School of Physics and Mathematics in Taraz, copyright certificate for the work of science No. 7744 dated January 24, 2020 for the object "Computer programme "Sandyk-Karakystak virtual tourist route". The tourist route Sandyk-Karakystak demonstrates a variety of landscapes, rich cultural and historical heritage of the Great Silk Road, which makes this region attractive for tourism. Field of application: electronic topographic maps, history, geography, computer science. Purpose: demonstrate sacred objects in the route, provide geographical parameters and description of each object. Programming language: C# (Visual Studio 2019).

Dilnaz Isseyeva, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7436 dated January 8, 2020 for the work of science (mathematics) "Proof of one rational identity using the Cauchy-Schwarz inequality".

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Dariga Zaikinova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7621 dated January 20, 2020 for the work of science "Kazakhisms and Anglicisms in the modern Russian language".

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Kassiyet Sabyr, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7641 dated January 21, 2020 for the object "Ednova mobile application". The author has developed a mobile application to study sciences in English.

Dariga Bazilova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright to the work of science No. 7773 dated January 28, 2020 for the object "On circle polynomials and the theory of divisibility".

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Akhmet Boyaubay, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7867 dated January 31, 2020 for the object "Beautiful sequences and their application". The author investigated various sequences of numbers and their application in everyday life.

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Alina Parkhomchuk, Aruzhan Kazbekova, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, inventor's copyright No. 7852 dated January 30, 2020 for the object "Development of new herbal tea based on local plant raw material". The author proposes a new composition of herbal tea based on local plant raw material using Rosa spinosissima endemic plant. NAZARBAYEV INTELLECTUAL SCHOOLS AUTONOMOUS EDUCATIONAL ORGANISATION 2020

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Zhamilya Kenzhetai, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, inventor's copyright No. 9428 dated April 24, 2020 for the object "Development of a recipe for fruit marmalade with kelp for functional nutrition of astronauts". The author has developed a recipe for agar fruit marmalade with kelp for functional nutrition of astronauts. This work aims to solve the problem of iodine deficiency in space. Kelp is the most suitable supplement for agar fruit marmalade due to the highest iodine content in comparison with other products.

Nazerke Zhylkybay, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 8966 dated March 20, 2020 for the object "Creating an electronic application "4 pictures - 1 word" on the English language curriculum for Grade 7". The purpose of this research is to create a game application "4 pictures - 1 word" for Android to revise the English vocabulary in Grade 7. Revision of the material in the form of a game helps foreign language learners to expand the vocabulary and increase the motivation for learning a foreign language.

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Artem Turkovsky, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7832 dated January 29, 2020 for the object "Study of Pythagorean and Heron's triangles using Ismoilov's arithmetic identity".

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Aziza Kireyeva, Alikhan Zhanymkhanov,

students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, inventor's copyright No. 7793 dated January 28, 2020 for the object "Technology for the production of yogurt from goat milk". This project work consider the ways of using goat milk as a raw material for the production of a fermented milk product.

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Azamat Bekbolat, Turlykhan Toktaganov, Yerkebulan Yelzhan, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright for invention No. 8995 dated March 26, 2020 to the object "Electronic glossary "GlossChemistry". The authors have developed an electronic dictionary for Grades 11-12 students in chemistry in the English language.

Tamila Rakhimbayeva, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 8052 dated February 10, 2020, for the object "Algorithm on graphs". This research work is practical, it considers the solutions of ten interesting problems compiled by the author, use of C++ programme accelerated the solution of these problems.

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Dariga Bazilova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7774 dated January 28, 2020, for the object "Solving the first degree linear equations with two unknowns using Ismoilov's arithmetic identity". The novelty of this research includes obtaining an algorithm for solving linear equations with two unknowns, based on combining the Euclidean algorithm with Ismoilov's identity.

Dayana Utegenova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright No. 7776 dated January 28, 2020 for the object "Finding the area of a trapezoid using Ismoilov's arithmetic identity". The project presents a PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

new way of proving the formula for the area of a trapezoid. It presents a rational solution of a range of Olympiad problems based on this method.

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Zhassulan Kazez, Tomiris Sabesh, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, copyright for the work of science No. 7906 dated February 3, 2020 for the object "Representation of "green" architecture using geometric models and curved lines".

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Yelaman Mirenov, Vladislav Prossekov, students of Nazarbayev Intellectual School of Chemistry and Biology in Petropavlovsk; inventor's copyright No. 8598 dated March 05, 2020 for the object "Indoor temperature registration system". The system consists of three main components: a data collection device based on the Arduino Nano board and a DHT11 or DHT22 sensor, which is connected to the USB port of a personal computer; an application for a personal computer that logs data from a data collection device and sends it to a database on a server; a web application that displays temperature data for a particular organisation, a particular office, on a particular date. The system can work with a large number of temperature collection devices, thus it is possible to keep records of temperatures for all rooms in the organisation. At the moment, the system is being tested at NIS ChB in Petropavlovsk and collects data from 60 classrooms. C#, PHP, SQL, C++ programming languages were used in the development of the system.

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Rakhat Khamitov, Zharken Utegenov, students of Nazarbayev Intellectual School of Physics and Mathematics in Kokshetau, inventor's copyright No. 9601 dated May 04, 2020 for the object "System for fire protection monitoring and assistance in evacuation from crowded buildings". The project proposes a model that combines the capabilities of the OpenCV machine vision libraries and the evacuation system powered by Arduino microcontrol unit. The developed evacuation system quickly responds upon fire detection. LED strips on the floor show the way to the exit in heavy smoke. Unlike conventional systems that use smoke detectors, this system detects fire at the moment of outbreak. Shopping centres, educational and medical institutions, manufacturing enterprises can be potential consumers.

Beibarys Gilazh, student of Nazarbayev Intellectual School of Chemistry and Biology in Atyrau, copyright No. 9066 dated March 31, 2020 for the object "Shanyrak mobile application based on Android Studio technologies". The project offers a free volunteer platform for posting events, discussions and personal messages, and searching for volunteers.

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Dana Mazhit, a student of Nazarbayev Intellectual School of Physics and Mathematics in Taldykorgan, inventor's copyright No. 11220 dated July 1, 2020 for the object "Investigation of phase equilibria in binary systems". The paper considers the theoretical and practical possibilities of the thermal analysis method in the study of binary systems, based on the Schröder-Le Chatelier equation, calculates the diagrams of state of binary systems, clarifies and aligns the values of thermodynamic parameters required for calculating.

Arai Mukusheva, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, copyright certificate No. 11613 dated August 12, 2020 for the object "New old friends".

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Amina Baktiyarova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, copyright certificate No. 11793 dated June 17, 2020, for the object "I felt a birth in my brain".



Zhansaya Toktarkhanova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, copyright certificate No. 11648 dated August 14, 2020, for the object "Destiny".

Danelya Khassanova, , a student of Nazarbayev Intellectual School of Physics and Mathematics in Uralsk, certificate of entering information into the State Register of Copyright Objects No. 11441 dated July 24, 2020.

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Islam Assanov, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, certificate of entering information into the State Register of Copyright Objects No. 12276 dated October 2, 2020 for the object "Computer programme for independent study of Physics, unit "Mechanical fluctuations"

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Aigul Maketayeva, a student of Nazarbayev Intellectual School of Physics and Mathematics in Taldykorgan, certificate of entering information into the State Register of Copyright Objects No. 12106 dated September 22, 2020 for the object "Production of biopolymers from food waste". The research project aims at making biopolymers from the skin of bananas and potatoe peels and comparing their properties with those of chemical polymers. The aim of the research was to study and define the method of biodegradable polymer production. Two sources of raw materials were considered for bioplastic production: potato and banana peels. Biopolymer decomposes in 1-2 months under different conditions, it does not have negative impact on the human body and the environment, it is biodegradable and can increase soil fertility. In the near future, bioplastics will become ordinary plastics. People will start the mass production of "green" plastics and will stop polluting the planet. Thus, biodegradable plastic of natural waste can be an alternative way of improving healthy lifestyles and preserving the environment.



Araibek Azatbek, Olzhas Kaiyrbek, students of Nazarbayev Intellectual School of Physics and Mathematics in Almaty, certificate of entering information into the State Register of Copyright Objects No. 7933 dated February 04, 2020 for the the work of science "Combinatorics elementary".

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Altynbek Kulbayev, Sholpan Amankulova, students of Nazarbayev Intellectual School of Physics and Mathematics in Almaty, certificate of entering information into the State Register of Copyright Objects No. 7878 dated January 31, 2020 to the object "Guidelines for preparing students for the Olympiad on basics of law".

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Ruslan Togaybayev, Anastasiya Krotova, Azat Zhaulbayev, students of Nazarbayev Intellectual School of Physics and Mathematics in Almaty, certificate of entering information into the State Register of Copyright Objects No. 11377 dated July 16, 2020 for the object "Collection Of Research Papers In The Framework of Global Perspectives and Project Work".



Bakytkhan Kurman, a student of Nazarbayev Intellectual School of Physics and

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Mathematics in Almaty, certificate of entering information into the State Register of Copyright Objects No. 7877 dated January 31, 2020.

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Assel Tolegenova, a student of Nazarbayev Intellectual School of Physics and Mathematics in Almaty, certificate of entering information into the State Register of Copyright Objects No. 8143 dated February 13, 2020 for the work of science "Learning Abay's "Words of Wisdom". A study guide".

Yerassyl Makhanov, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent, certificate of entering information into the State Register of Copyright Objects No. 13146 for the object "Scientific research project "Artificial ECO-Tree". The authors of the project propose an artificial street tree "Artificial ECO-Tree". This will contribute both to air purification, and lighting at night. The tree will serve as a source of electrical energy for charging gadgets, as a means of spending leisure time and will make the city landscape more futuristic.

Nurai Nurseyit, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent, certificate of entering information into the State Register of Copyright Objects No. 9845 for the object "Mathematical game "Vectors in Outer Space". Through the math game students will consolidate the topic of "Vectors in stereometry" in an entertaining and cognitive way and get acquainted with interesting facts of astronomy.

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Dias Ilyas, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent, certificate of entering information into the State Register of Copyright Objects

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No. 13149 for the object "CodeLine Online programming school". This project offers an educational website. Users can independently register and login, then choose an interesting training course. The process has a wide range of functions: the student has access to all materials, from a video lesson to additional educational resources.

Yelena Tyan, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent, certificate of entering information into the State Register of Copyright Objects No. 11812 for the object "Mathematical game "Journey around Nur-Sultan and the angle between straight lines in space".

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Sabina Ualibekova, Gulzhan Kaliakparova, students of Nazarbayev Intellectual School of Chemistry and Biology in Karaganda, certificate of entering information into the State Register of Copyright Objects No. 12159 dated September 24, 2020 for the object "Demonstration and training set of information protection programmes". The application "Automated workstation of the dentist" is an application developed in Delphi high-level programming language, it aims at increasing the level of dental care based on online data exchange, due to quick access to information and reducing the time for writing various documents and reports.

Aldiyar Zhumadilda, student a of Nazarbayev Intellectual School of Chemistry and Biology in Karaganda, certificate of entering information into the State Register of Copyright Objects No. 12437 dated October 08, 2020 for the object "Programme of psychological relief based on Mandala geometric patterns".

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The programme based on geometric patterns is designed to reduce stress in accordance with the direction of art therapy, it uses Mandala drawings, which help to stabilise the psychological state. Also, the programme provides for getting the psychologist's advice. The programme can be applied in art therapy, assessment of the psychological state.

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Anel Adalbek, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, certificate of entering information into the State Register of Copyright Objects No. 10476 dated June 2, 2020 for the literary work, story "Total misunderstanding".

The story of a chance meeting that saves the life of the main female character, who lives in a small town. Returning home by car, she noticed that she is being chased by a car for a long time. The girl began to panic, because even when she changed the path, the car continued chasing. However, she had no idea what was going on. The story for those who love shocking denouements. It is intended for readers aged 14 and over.

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Ibrakhim Baissenbekov, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, certificate of entering information into the State Register of Copyright Objects No. 10282 dated May 27, 2020 for the literary work, story "Lost Personality". The plot of the story is based on the life of a World War II veteran who had to fight with life after the war. (All characters are fictional and any coincidences are random). According to the author, in those years the influence of the mafia in New York was great. The protagonist, Vitto Scalette, rethinking life after witnessing many innocent deaths, joins the ranks of the New York mafia, that seems to be a symbol of protecting the ordinary poor. The narration is in the third person. It is intended for readers aged 14 and over.

Miras Kanatov, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, certificate of entering

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information into the State Register of Copyright Objects No. 9829 dated February 13, 2020 for the literary work, story "A.T.S.A.A.T.D." The unknown and incomprehensible often attracts, and sometimes frightens people. Our inner world is full of wonderful secrets. The protagonist of this story is a young man working in an office. The reader is to find out himself whether the hero describes reality or his dream. The story is intended for readers of all ages, but requires a high level of English proficiency. Teachers can use this work on the English language and literature lessons in upper grades.



Assel Mussayeva, a student of Nazarbayev Intellectual School of Chemistry and Biology in Shymkent, certificate of entering information into the State Register of Copyright Objects No. 12652 dated October 16, 2020 for the object "Use of "shashbau" and "sholpy" to prevent spinal curvature". The author is a finalist of the "Academy of Creativity 5" of UNESCO Clubs Kazakhstan in the science nomination 2020.

Alim Nauryzali, a student of the International School in Nur-Sultan, certificate of entering information into the State Register of Copyright Objects No. 12293 dated October 2, 2020 for the object "Combinatoric Law of Platonic Solids".

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Utility model and invention patents of NIS students

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Adlet Bekmaganbet, Alimkhan Bagzhan, Maryam Kurumbayeva, Alisher Kakabay, Yermat Alikhan, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar, utility model patent No. 5128 dated July 10, 2020, "Method of producing fuel briquettes". The model describes the method for producing fuel briquettes for various industrial furnaces, boilers of low and medium productivity, and household furnaces, from organic matter. Fuel briquettes are made of sump weed and fallen leaves on the basis of organic matter. Lignin contained in fallen leaves and sump weed is used as a binder. It becomes malleable when heated to 230 °C.

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Ramazan Azimzhan, a student of Nazarbayev Intellectual School of Physics and Mathematics in Nur-Sultan, utility model patent No. 5175 dated July 17, 2020, "Boat operating on salt water". The invention is recognised as a technical solution for designing a boat operating on the salt water. The author focuses on the environmental friendliness of the project and the ease of use of the "salt engine".

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Aigul Melissova, a student of Nazarbayev Intellectual School of Physics and Mathematics in Taldykorgan, utility model patent No. 0640 dated July 09, 2020, "Methods for producing biopolymers from food waste". The proposed technology for producing biopolymers is very simple. Removing starch from food waste takes two to three hours, and production of a biopolymer - one to two hours. The process of drying and shaping the resulting biopolymer, choosing the appropriate thickness is the longest.

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Askar Galammadin, Sagynbek Talgatuly, students of Nazarbayev Intellectual School of Chemistry and Biology in Aktau, utility model patent No. 5541 dated April 25, 2020, "Automated walking stick for the visually impaired". This model has the following functions: easily detects any obstacles, using the touch button allows a person to call for help in case of disorientation; the stick gives a signal in case of falling; to get to a particular destination, people can use the function "from point A to point B". The device is charged in the result of internal conversion of mechanical energy into electrical energy. **Dilnaz Kamalova**, a student of Nazarbayev Intellectual School of Physics and Mathematics in Almaty, utility patent No.5214 dated May 10, 2020 for "Smart Pill Box for Remote Monitoring of Pharmaceutical Treatment".

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Aldiyar Appaz, a student of Nazarbayev Intellectual School of Chemistry and Biology in Kyzylorda, utility patent No.4537 dated September 10, 2020 for "Method for Producing Amorphous Silica from Rice Hulls".



Zarina Alsauytova, a student of Nazarbayev Intellectual School of Chemistry and Biology in Kyzylorda, utility patent No.5305 dated August 21, 2020 for "Method for Producing Silicate Adsorbent"

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Ali Aymukhanbetov, a student of Nazarbayev Intellectual School of Chemistry and Biology in Ust-Kamenogorsk, utility patent No.34394 dated October 2, 2020 for "Functional Cookies". The model is associated with the development of evidence-based biotechnology and the formulation of food products from the original environmentally friendly raw materials with antidiabetic properties.

Meruert Malikova, Dinora Khalidullayevna, students of Nazarbayev Intellectual School of Chemistry and Biology in Shymkent, utility patent No. dated May 29, 2020 "Wireless Simultaneous Interpretation Device". The model represents a wireless device for simultaneous interpretation.

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Winners of financial innovation grants

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Lyubov Dudchenko, a student of Nazarbayev Intellectual School of Physics and Mathematics in Almaty. A grant of 1000000 KZT for winning the nomination "Best IT Project" for "Mobile Application for Zhilstroysberbank" startup project, which allows depositors to accumulate their bonuses and build their virtual houses (Baiterek Hackathon - 2019 Republican Contest for Innovative Projects organised by Zhilstroysberbank of Kazakhstan supported by Bayterek, National Managing Holding and QazTech Ventures, Almaty, December 2019).

Zhantore Bissengali, Yernur Kuanysh, Askar Nurakhmet, students of Nazarbayev Intellectual School of Physics and Mathematics in Almaty. A grant of 50 000 KZT for participation in the first KAZAKHSTAN International Robotics Competition on the VEX platform sponsored by Kerneu Technology, Turan University, First Robotics, Make X, Vex robotics, January 7-9, 2020.

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Darkhan Zhangeldy, Kamila Amantayeva, Omirkhan Rizabek, Rakhat Akimzhan, students of Nazarbayev Intellectual School of Chemistry and Biology in Petropavlovsk. A grant of 380 000 KZT for "Senim Mobile Application for coordination of volunteer activity" startup project in UNICEF and UNDP Generation Unlimited Youth Challenge in November 2019.

Yerassyl Maratov, a student of Nazarbayev Intellectual School of Chemistry and Biology in Shymkent. A grant of 90 000 KZT for "Baiterek 3D pazzle" startup project in Tugan Zher creative contest in December 2019, organised by Adyrna National and Ethnographic Association and Civil Initiatives Support Centre in Almaty.

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_____/ 10-15 /_____

Matvey Kovrigin, Alpamys Primkulov, Madina Naumagambetova, Gulnaz Serikpay, Dinmukhamet Murat, Nuray Altynbekova, students of Nazarbayev Intellectual School of Chemistry and Biology in Shymkent. A grant of 600 000 KZT by Shymkent Innovation Private Association for the best startup project in December 2019.

_____/ **16-18** /_____

Turlykhan Toktaganov, Azamat Bekbolat, Yerkebulan Yelzhan, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar. A grant of 250 000 KZT for TourAR startup project. The project allows making an AR-trip to the desired place, observing the landscape and objects in real size from home. TravelTech Republican Akimat of Nur-Sultan, Astana Hackathon, Innovations, NS Convention & Visitors Bureau, Turkish Airlines, Kazakh Tourism, Here Technologies, Astana IT University, KAGIR, December 2019.

_____/ **19-20** /

Azamat Bekbolat, Yerkebulan Yelzhan, students of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar. A grant of 150 000 KZT for QazCode startup project, EduTech Republican Hackathon, Akimat of Nur-Sultan, Astana Innovations, Seedstars, AIFC proffesionals, 2020.

Azamat Bekbolat, a student of Nazarbayev Intellectual School of Chemistry and Biology in Pavlodar. A grant of 1 300 000 KZT for Creating a Social Network startup project, a competition for developing prototype applications for Coca-Cola Kazakhstan, Coca-Cola jointly with Astana Hub, June 11, 2020.

_____/ 21 /_____

┤ 22-37 /───

Assem Dzhanibekova, Myrzaali Assanov, Albina Berik, Nurkhozha Alshenov, Akhmet Kuankan, Batyrkhan Yerimbet, Aldiyar Tumenbay, Nursultan Sagyntay, Assem Karmyssova, Miras Aden, Abilmansur Aldambergen, Nurgeldy Yessengeldy, Alina Zhanabayeva, Aigerim Zhidebay, Zhanyerke Shashgyn, Danil Mukhalev, students of Nazarbayev Intellectual School of Chemistry and Biology in Aktau. A grant of 2 400 000 KZT for winning the Merit Award contest, Nenaris, June 17, 2020.

Borte Kurbanbay, Zhibek Aliakhbar, Almira Abdikhadir, Aida Malikova, students of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent. A grant of 1 000 000 KZT for winning at U:hack festival, Content and Media, Shymkent, akimat of Shymkent, 2020.

_____/ 38-41 /_____

Altay Alen, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent. A grant of **100 000** KZT for winning at IT CAMP contest, Youth Resource Center, Shymkent, 2020.

____/ 42 /_____

Nariman Issayev, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent. A grant of **50 000** KZT for winning at IT CAMP contest, Youth Resource Center, Shymkent, 2020.

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-/ 43 /---

Yessimkhan Sagiyev, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent. A grant of **50 000** KZT for winning at IT CAMP contest, Youth Resource Center, Shymkent, 2020.

Borte Kurbanbay, a student of Nazarbayev Intellectual School of Physics and Mathematics in Shymkent. A grant of **150 000** KZT for winning at IT CAMP contest, Youth Resource Center, Shymkent, 2020.



Kamila Amantayeva, Rakhat Akimzhan, Omirkhan Rizabek, Darkhan Zhangeldy, students of Nazarbayev Intellectual School of Chemistry and Biology in Petropavlovsk. A grant of **380 000** KZT for "Mobile Application for Disabled People" startup project, Republican stage of the International competition Generation Unlimited Youth Challenge, UNESCO Office in Kazakhstan, 2020.

Winners of International and Republican Competitions and Olympiads 1. Winners of Mathematics and Design International Science Competition

Aliaskar Bekishev, project "Concept of a Generalised Series and a Study of its Convergence", Mathematical Models of Real Processes in Nature and Society, Gold medal and first-degree diploma.

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Tomiris Zhumagaliyeva, project on "Making up a Mathematical Model of a Complex Epicycloid,

_____/ 2 /_____

Hypocycloid and Tractrix", Mathematical Models of Real Processes in Nature and Society, Gold medal and first-degree diploma.

_____/ 3 /_____

Arkady Tsai, project on "Origametry in Solving Geometric and Practical Problems", in Geometric Miniatures, Gold medal and firstdegree diploma.

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NAZARBAYEV INTELLECTUAL SCHOOLS AUTONOMOUS EDUCATIONAL ORGANISATION 2020

Artem Turkovsky, project on "Studying Pythagorean and Heronian Triangles using the Arithmetic Identity of D. Ismoilov, Science of Mathematics, Gold medal and first-degree diploma.

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/ 4 /___

Nursultan Kassymkhan, project on "Percolation Theory and the Fire Spread Reduction Model", Mathematical Models of Real Processes in Nature and Society, Silver medal and second-degree diploma.

Zhanibek Shapatov, project on "Probabilistic Text Modelling for Automatic Mind Mapping Based on the Content of Works of Fiction", Mathematical Models of Real Processes in Nature and Society, Silver medal and seconddegree diploma.

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Alisher Omirzak, project on "Rational Trigonometry and the Cosine Theorem for a Quadrilateral", Geometric Miniatures, Silver medal and second-degree diploma.

-/ 8 /---

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Kassym Gabdushev, project on "Small and Medium-Sized Enterprises as a Major Factor in the Development of the National Economy", Mathematical Models of Real Processes in Nature and Society, Bronze medal and thirddegree diploma.

Boyaubay Akhmet, project on "Beautiful sequences and their application", Science of Mathematics, Bronze medal and third-degree diploma.

_____ **9** /_____

Dariga Bazilova, project on "Cyclotomic Polynomials and Divisor Theory", Science of Mathematics, Bronze medal and third-degree diploma.

Dayana Utegenova, project on "Finding the Area of a Trapezium Through the Arithmetic Identity of D. Ismoilov", Science of Mathematics, Bronze medal and third-degree diploma.

_____/ 11 /_____



Zholaman Marshiitov, project on "Stereographic Projection of the Icosahedron-Dodecahedron Structure of the Earth", Mathematical Models of Real Processes in Nature and Society, Bronze medal and thirddegree diploma.

Alibi Nugmanov, Ikram Ibragimov, project "For a financial expert 2+2 is not always 4", Financial Mathematics, Bronze medal and thirddegree diploma.

_____/ 13 /_____

Akzhibek Khayrulla, project on "Using Complex Numbers in Solving Geometric Problems", Using Mathematical Methods for Solving Vocationally-Orientated Problems, Bronze medal and third-degree diploma

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2. Winners of Young Scientist international competition of research projects



Zhanna Abdrakhmanova, Study on microorganisms isolated from kitchen household items that decompose fat and protein food contaminations, Environmental Protection and Human Health, Gold medal and first-degree diploma.

Aygerim Tanirbergenova, Study on microorganisms isolated from kitchen household items that decompose fat and protein food contaminations, Environmental Protection and Human Health, Gold medal and first-degree diploma.

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_____/ 17 /_____

Arsen Aliyev, project "Berkingali Atshybayev is a Prominent Figure in the Alash Movement", Language, Culture and Law in the XXI Century: Stages of Knowledge, Gold medal and first-degree diploma.

_____/ **18-19** /_____

Rakhat Khamitov, Zharken Utegenov, project on "System for fire protection monitoring and assistance in evacuation from crowded buildings", Computer Science and IT, Gold medal and first-degree diploma.



Ulan Seytkaliyev, project on "The Movement of the Body in the Field of Central Forces", Renewable Energy – the Energy of the Future, Gold medal and first-degree diploma.

3. Winners of Discovering the World of Science international competition for research projects

_____/ 21-22 /_____

Saniya Umurzakova, Dilara Usembayeva, Producing Plastics from Plant Food Waste, Gold medal and first-degree diploma.

| / | 23 | / |
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| 7 | | |
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Magzhan Tegissov, Simulator for Astronauts Constructed of Hydraulic Cylinders that Generate Electricity, Silver medal and second-degree diploma.

Alizhan Ibravev Drospects for Crowing

Alizhan Ibrayev, Prospects for Growing Greenhouse Crops (Vegetables) on Board the Space Station for the Self-Sustenance of Astronauts, Silver medal and second-degree diploma.



Nurzhanbek Kurmanbek, Determining the Effect of the Preparation on the Germination

Energy and Laboratory Germination Capacity of Seeds of Various Rice Varieties, Silver medal and second-degree diploma.



Aruzhan Akimkhan, Increasing the Sensitivity of Radio Telescopes to Detect Galaxies, Bronze medal and third-degree diploma.

_____/ 27 /_____

Alisher Sabigaliyev, Space Shower, Bronze medal and third-degree diploma.

_____/ 28-29 /_____

Daniil Filimonov, Viktor Kakhno, Autonomous Station for the Construction of Housing Estates on Mars, Bronze medal and third-degree diploma.

4. Winners of the Republican Research Projects Contest

_____/ 30 /_____/ 38-39 /_____

Ulan Seytkaliyev, project on "Movement of a Body in a Central Force Field", Earth and Space Sciences, Gold medal and first-degree diploma

Aruzhan Yendybayeva, Aliya Yelshibay, Business Project for Making Ice Cream from Mare's Milk, Economics, Gold medal and first-degree diploma.

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project on "Ocean Cleaners", Technology, Gold medal and first-degree diploma.



project on "Active Panel Interactive Surface", Computer Science, Gold medal and first-degree diploma.

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_____/ 36 /_____

Arkady Tsai, project on "Origametry in Solving Geometric and Practical Problems", Mathematics, Gold medal and first-degree diploma.

Aniyar Durmagambetova, project on "Application of High-Accuracy Neural Networks for Detection of Railway Track Defects", Computer Science, Gold medal and first-degree diploma.



Zhanibek Shapatov, project on "Probabilistic Text Modelling for Automatic Mind Mapping Based on the Content of Works of Fiction", Applied Mathematics, Gold medal and first-degree diploma **Dilnaz Seiylkhanova**, project on "Intensive Apple Orchard Using SMART Technology in the Climatic Conditions of the East Kazakhstan Region", Biology, Gold medal and first-degree diploma.

Avelina Lavrinovich, project on "Bioindication of Air Pollution by the Complex of Features of the Pyramidal Poplar", Environmental Protection, Gold medal and first-degree diploma.

_____/ 42 /_____

_____ 41 /_____

Amina Zharkenova, project on "Obtaining Allotropic Modifications of Carbon from Carbon Dioxide Emitted by Industrial Activities Through Electrolysis of Active Metal Compounds", Chemistry, Gold medal and firstdegree diploma.



Bauyrzhan Apil, Yersultan Tursyn, project on "Prospects of Sandyk-Karakystak Tourist Route", Local History, Gold medal and firstdegree diploma.

Amina Sadu, project on "The Function of Clothing in Bunin's prose", Literature. Russian Literature, Gold medal and first-degree diploma. **Fatima Muttairova**, project "Compliments in the Speech of Teenagers", Linguistics. Russian Language, Gold medal and first-degree diploma.

_____ 46 /_____

-/ 45 /---

Alizhan Sholpanbekova, project "Autonomous Animal Monitoring Device Based on the LoRa Modulation Method", Technology, Silver medal and second-degree diploma.

Yessengali Makhanov, project "Artificial ECO-Tree", Technology, Silver medal and second-degree diploma

_____ 48-49 /____

_/ 46 /_____

48-49. Aida Abkenova, Shakhnazar Saylaukhan, project on "Development of an Autonomous Device for Dispensing First Aid Medicine using a Programmed Microcontroller", Computer Science, Silver medal and seconddegree diploma.

Tamirlan Mamutov, project "Braille Complex", Computer Science, Silver medal and second-degree diploma.

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_____ 50 /_____

Anara Bissenova, project on "Expressing the sum of n terms of the Fibonacci Series through the i-th term", Mathematics, Silver medal and second-degree diploma, educational grant in KBTU.

_____/ 52-53 /_____

Adil Azamatuly, Dias Kozhantayev, project "Business Plan for the Production of Paving Slabs from Recycled Plastic Waste", Economics, Silver medal and second-degree diploma. __ 54 /___

Darina Mukhamedzhanova, project on "Innovative Use of Sorbent Agents to Increase Plant Salinity Tolerance", Biology, Silver medal and second-degree diploma.

Aruzhan Keneshbekova, project on "Production of Magnetic Powder based on Cobalt (II) Ferrite from the Wastes of Imstalkon Zhambyl Steel Production Plant", Chemistry, Silver medal and second-degree diploma.

_____/ 55 /_____

_____ 56 /_____

Aynur Bissenalina, project on "Economic and Social Significance of the Great Silk Road Transit Route", Chemistry, Silver medal and second-degree diploma.

_____/ 57 /_____

Yerkan Yerkin, project on the "Methods of Developing the Tax System of the Alash Autonomy", History, Silver medal and seconddegree diploma.

_____/ 58 /_____

Akzhibek Khairulla, project on the "Relevance of the Mobile Application Devoted to Prominent People of the Aktobe Region", Local History, Silver medal and second-degree diploma.

Yerkebulan Yelzhan, project "Benefits of the Mobile Application Devoted to Increase Kazakh Language Vocabulary", Linguistics. Kazakh Language, Silver medal and seconddegree diploma.

_____/ **59** /____

-/ 60-61 /-----

Gulfairuz Niyalova, Akbobek Zhetkizgenova, project on the "Impact of Social Networking Language on Literary Language", Linguistics. Kazakh language, Silver medal and second-degree diploma.

Bek Kadessov, Alisher Rymkan, project on the "Production of Gold Nanoparticles by Condensation Method to Fight Cancer", Physics, Silver medal and second-degree diploma.

_____/ 63-64 /_____

_____ 62 /_____

Aslan Sabyrov, Batyrkhan Mustafin, project "Search and Study of Unusual Events Using Data from the Horizon-10T system", Earth and Space Sciences, Bronze medal and third-degree diploma.

Magzhan Tegissov, project "Simulator for Astronauts Constructed of Hydraulic Cylinders that Generate Electricity", Earth and Space Sciences, Bronze medal and third-degree diploma.

_____ 65 /_____

Altynay Bakbayeva, project "Developing

a Software for a Sensor that turns on the Emergency Brake Assist System", Technology, Bronze medal and third-degree diploma.



Azamat Oryn, Rauan Ibragim, project on "Waste Filtration to Clean the Caspian Sea", Technology, Bronze medal and third-degree diploma.

Dariga Bolatbay, Galymzhan Idreysov, project "Smart Oasis is a system of power and water supply to special areas using solar panels", Technology, Bronze medal and thirddegree diploma.

____/ 69-70 /_____

Nursultan Sagyntay, Radmir Khabibulin, project "Polymer Solar Cells for Smart Windows", Technology, Bronze medal and third-degree diploma.

_____/ **71-72** /_____

_____/ **73-74** /_____



Filimonov Daniil, project "Neural Networks for Autonomous Monitoring of People in Need of Care", Computer Science, Bronze medal and third-degree diploma.

_____/ **75** /_____



Asparukh Sultan-Murat, project "Smart City", Computer Science, Bronze medal and third-degree diploma.

_____/ 77 /_____

Madina Dayardiyeva, project "Mathematical Optimization of Robot Motion", Applied Mathematics, Bronze medal and third-degree diploma.

Aziza Kireyeva, project on "Technology for the production of yogurt from goat milk", Biology, Bronze medal and third-degree diploma.

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PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

Artem Li, Nikita Nikulin, project "Microorganisms in Treatment Facilities, their Characteristics and Practical Application", Environmental Protection, Bronze medal and third-degree diploma.

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/ 79-80 /-----

Dilnaz Rysbek, project on "The impact of the words of Alash activists on students' citizenship" in Ethnoculturology, Bronze medal and third-degree diploma.



—/ **83** /—

-/ 82 /---

Marzhan Yeraliyeva, project on "Common features of the Kazakh and Ukrainian Cultures on the example of Zharapazan ritual songs and carols in Nikolai Gogol's "Christmas Eve", Literature. Russian Literature, Bronze medal and third-degree diploma.

5. Winners of Zerde Republican Contest for Research Projects

/ 84 /____/ 89-90 /____

Ariana Slepykh, project "Blood Type as a Factor Influencing Human Health and Character", Biology, first-degree diploma.

_____/ 85 /_____

Ranona Zhalelkyzy, project "Therapeutic Properties of Honey Products", Biology, firstdegree diploma.

_____/ 86-87 /_____

Aziza Abatova, Dilnaz Mubarak, project "Orange Peel Fertiliser", Chemistry, first-degree diploma.

_____/ 88 /_____

Alikhan Amangeldyev, project on "Making an Antibacterial Agent from Natural Ingredients", Biology: Medicine, Psychology, Valeology, firstdegree diploma. **Dameli Askarova, Arina Kharissova,** project "Agglutination as a Way of Creating Fantastic Characters for a Fairy Tale and Illustrating Them", Russian language and Literature, first degree diploma.



Aylana Omirzak, project "Monuments in Kokshetau", Local History, first-degree diploma.

Ayaulym Nurlan, project "Safe firefighting elevator", Robotics, first-degree diploma.

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6. Winners of X Dzholdasbekov International Contest for Research Projects in Mathematics and Mechanics

_____/ 94 /_____

Nursultan Kassymkhan, project on "Percolation Theory and the Fire Spread Reduction Model", Mathematics, Gold medal and first-degree diploma.

_____/ 95 /_____

Anara Bissenova, project on "Expressing the sum of n terms of the Fibonacci Series

Elements for Space Industry

through the i-th term", Mathematics, Bronze medal and third-degree diploma.



Doszhan Temirbekov, project on "The mathematical method for calculating mean values by comparing them with their means" in Mathematics, Bronze medal and third-degree diploma.

7. Winners of the XXVII All-Russian Competition of Youth Research Projects named after V.I. Vernadsky from 25 July to 3 July 2020 First-degree diplomas (18 winners)

| / 97 / | / 103 / |
|---|---|
| Dayana Amangeldy , № 200789 Research of Biodiversity of the Ural River Bank | Kaydarov Amir , № 200747 Analysis of an Effective Geostationary Satellite Launch |
| / 98-99 / | / 104 / |
| Artem Li, Nikita Nikulin , № 200116 Micro-organisms in Treatment Facilities, their Characteristics and Practical Application | Altynay Bakbayeva , № 200112 Developing a Software for a Sensor that Turns on the Emergency Brake Assist System |
| / 100 / | / 105 / |
| Dilnaza Karmenova , № 200738 Alternative Way to Fuel Independence in Agriculture | Miras Yesmuratuly, № 200468 Automation of Water Level Control in Artificial Water-Storage Reservoirs |
| / 101 / | / 106 / |
| Rakhat Agassultanov , Nº 200668 Synthesis and research of corrosion inhibitors on the example of lignitic material | Indira Kairzhanova, № 200666 Produc- tion of Porous Composite Materials by Self- Propagating High-Temperature Synthesis for Space Technology |
| / 102 / | / 107-109 / |
| Adilet Murat, № 200301 Study of the Mechanical Properties of Bronze with Alloving | Nurgissa Uatkhan. Rassul Maulit. |

Nurgissa Uatkhan, Rassul Maulit, Bakhtiyar Bulatov, № 200750 Monitoring the Efficiency of a Solar-Wind Power Plant WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

PART 1

/ 110-111 /------

Darina Batenova, Dilnaz Mustafina, № 200675 Reading Parables of Various Cultures as a Tool for Developing the Emotional Intelligence of Teenagers in Kazakhstan

Daniyar Akbatyrov, Anel Kim, № 200363 Trilingual Education: Student opinion

_____/ 114-115 /_____

/ 112-113 /

Samal Baigunakova, Olzhas Kusayin, Nº 200676 The Story of the Precious Stone of Akmola Concentration Camp of Wives of Traitors to the Motherland

Laureate Diplomas (11 prize winners)

/ 116-118 / Dilnaz Abzal, Amina Temirzhanova, Islam

Amergaliyev, № 200024 Alternative Energy Sources. Biogas

Araylym Satiyeva, № 200667 Biochemical Basis of Cellulosic Waste Recycling for Ethanol Production

/ 120 /

_____/ 121 /_____

_____/ 119 /_____

Aruzhan Keneshbekova № 200087 Production of Magnetic Powder based on Cobalt (II) Ferrite from the Wastes of Imstalkon Zhambyl Steel Production Plant

Zhassulan Kazez, № 200027 New **Opportunities for Saving Electricity in Household** Economy.

_____/ 122 /_____

Sotnikova, Nº 200105 Valeriya Comparative Analysis between the Education System of Nazarbayev Intellectual Schools and High Schools in the United States

Yuliya Khan, № 200085 Projective Graphics of Tikhomirova V. T.

_____/ **123** /_____



Timur Akhmetov, № 200281 How Does the Modern Architecture of Nur-Sultan Influence on the National Culture Development?

/ 125-126 /

Aruzhan Aitmukhambetova, Rukhsana Ainabek, № 200022 Revealing the peculiarities of ceramics ornamentation and determining the relationship of tribes of the Bronze Age using statistical analysis based on materials about Kempirtas burial ground in Pavlodar region.

> **Best Interdisciplinary Research** (3 prize winners)



Aruzhan Aitmukhambetova, Rukhsana Ainabek, № 200022 Revealing the peculiarities of ceramics ornamentation and determining the relationship of tribes of the Bronze Age using statistical analysis based on materials about Kempirtas burial ground in Pavlodar region.



Timur Akhmetov, № 200281 How does the modern architecture of Nur-Sultan influence the national culture development?

Best report (1 prize winner)

_____/ 130 /_____

_____ 131 /_____

Indira Kairzhanova, № 200666 Production of porous composite materials by selfpropagating high-temperature synthesis for space technology

Best Experimental Research (3 prize winners)

Assem Bakytkyzy, № 200168 Use of biological preparations as an environmentally friendly method of processing cucumber seeds

Rakhat Agassultanov, № 200668 Synthesis and Research of Corrosion Inhibitors on the example of Lignitic Material.

_____/ 132 /_____

Adel Massalimova, № 200743 Creating own slogans based on linguistic analysis of slogans of the world-known brands

_____/ 133 /_____

Best presentation of a work (1 prize winner)



Zhassulan Kazez, № 200027 New opportunities for saving electricity in household economy

For problem-based research (5 prize winners)

_____/ **135** /_____

Adilet Muratov, № 200301 Study of the mechanical properties of bronze with alloying elements for space industry

/ 136-137 /----

Darina Batenova, Dilnaz Mustafina, № 200675 Reading parables of various cultures as a tool for developing the emotional intelligence of teenagers in Kazakhstan



Samal Baigunakova, Olzhas Kusayin, № 200676 The story of the precious stone of Akmola Concentration Camp of Wives of Traitors to the Motherland

For the study of socially important objects (3 prize winners)

_____/ 140 /_____

Zhassulan Kazez, № 200027, No. 200027 New possibilities of saving electricity in household economy

_____/ 141-142 /_____

Samal Baigunakova, Olzhas Kusayin, № 200676 The story of the precious stone of Akmola Concentration Camp of Wives of Traitors to the Motherland

Best Installation (1 prize winner)



Miras Yesmuratuly, № 200468 Automation of water level control in artificial water-storage reservoirs.

| 8. Winners of Intern 8.1 61st International Mat | national Olympiads thematical Olympiad (IMO) |
|--|---|
| / 1 / | / 2 / |
| Tair Satubaldin, Mathematics, Silver medal | Tamirlan Bektemissov , Mathematics, Silver medal |
| 8.2 54th International Mendeleev Ch | emistry Olympiad, July 13 - 18, 2020 |
| / 1 / | / 2 / |
| Khaidar Kairbek , Chemistry, Silver medal | Abilmansur Muzhubaev , Chemistry, Bronze medal |
| 8.3 XVI International Zhautykov Olympiad in January 8 | Mathematics, Physics and Computer Science, -14, 2020 |
| / 1 / | / 6 / |
| Satubaldin Tair, Mathematics, Gold medal | Pitebay Yersultan, Physics, Silver medal |
| / 2 / | / 7 / |
| Bektemissov Tamirlan , Mathematics, Gold medal | Seytkaliyev Ulan , Mathematics, Bronze medal |
| / 3 / | / 8 / |
| Tulenov Diyar, Physics, Gold medal | Ismagulov Temirlan , Physics, Bronze medal |
| / 4 / | / 9 / |
| Sabyrbek Aruzhan , Mathematics, Silver medal | Altay Yerassyl , Computer Science, Bronze medal |
| / 5 / | / 10 / |
| Olzhabayev Assylbek , Mathematics, Silver medal | Muratov Adilkhan , Computer Science, Bronze medal |

8.4 VI Bekturov International Chemistry Olympiad, 25-26 February 2020

Chemistry, grade 10 Alina Komkova, Gold medal and firstdegree diploma Chemistry, grades 11-12

Khaydar Kairbek, Gold medal and first-degree diploma

Abilmansur Muzhubayev, Gold medal and first-degree diploma

52nd Chemistry Olympiad in Istanbul (Turkey), July 23-29, 2020, online Abilmansur Muzhubayev, Bronze medal in

Abilmansur Muzhubayev, Bronze medal in Chemistry

8.5 Al-Farabi International Remote Olympiad in Science and Mathematics, October 30, 2020

Biology, 1st place Dana Baygal Assem Kabdulla Aruzhan Khalikova Bagzhan Alimkhan Aida Malikova Zhansaya Bolatkhan Maryam Kurumbayeva Aruzhan Shabenova Assem Kenzhetayeva Dariya Bakir Zhibek Aliakhbar Balaussa Aptarbek Aylana Kulatayeva Aydana Sarimova Adina Shapenova Nazym Kuramys Medina Nurlanova Levla Akberdinova Aruzhan Kazbekova Kamila Zhenissova Aida Daniyarova Inabat Amantay Nurbek Akhylbekov Balkiya Ospan Timur Shkrigunov Aldiyar Ramazanov Nurmukhamed Ryskulbek

Biology, 2nd place

Milena Chigodaykina Yasmin Ankapova Kazyna Kunratbayeva Gaukhar Meiram Alua Malik Symbat Tanatdyrdy Symbat Musa Assiya Tedzhen Aknur Samigulayeva Dulatali Azhmakhan Adel Kusherova Avazhan Yessimova Aruzhan Abibulla Mira Baitugurova Aruzhan Saylauova Bagzhan Tortbay Madina Akhmadkyzy

Biology, 3rd place Fatima Diyas **Danil Snegirev** Alpamys Abenov Aneliya Hegai Alina Ligai Anel Beysova Ayziya Yesbergen Avzere Bolat Nuray Kassymova Adel Berdalina Amina Izbassarova Dariga Kenesbayeva Tarazy Kadirgalikyzy Aiya Arsen Dariga Kalymbekova Aruzhan Ibragim Aruzhan Bakyt Zhuldyzay Turniyazova Dossymzhan Raiymbek **Zhanel Serikova** Nazira Akmoldayeva **Beatrice Kuanysh** Tamirlan Belgibayev Yeldana Uaykhan Aruzhan Yertugan Yernur Kenzhaly Araylym Zhasuzak Aruzhan Muratova Bakvtzhan Yeshenkul Aneliya Zhambul

Geography, 1st place

Yerkebulan Tazabek Dana Tolybay Agila Zhussupova Rustem Imangazin

Geography, 2nd place

Kassymkhan Kanatbek Nurali Kalmen Ilyas Kenzhembetov Nurzat Baratbek Sabina Seyitzhapbar Aygul Maketayeva Aruzhan Abilova Togzhan Nurmakhankyzy Merey Beysenbayeva Arsen Sydykov Islam Zholdasbek Geography, 3rd place Assylkhan Smet Meruert Meruert Alinur Sapar Anel Samzayeva Aygul Maketayeva Mazhit Kuanysh Assel Dyussembinova Azamat Orazgali Amina Seilkhanova Zangar Otesh Uldana Turlybi Aliya Dinderbay Akniyet Shamgaliyeva

Physics, 1st place

Dias Raimberdinov Alisher Kakabay Yelnur Zholdykul Dilnaz Seifullina Nazym Rassulova Bakdaulet Mikhiyadinov Aiya Sayranbayeva Alisher Yerkebayev Serikbol Talgatuly Almaz Askatov Ulan Mustafin Aruzhan Sraiyl Georgy Shatov

Physics, 2nd place

Kadirzhan Lutfullayev Danabek Saliyev Nuray Narshibayeva Miras Kairolla Nariman Issayev Nuray Altynbekova Olzhas Kusaiyn

Physics, 3rd place

Dilnaz Yeslambekova Kuanysh Sarsikeyev Kaisar Maxutov Radmir Khabibulin Meyrkhan Konurov

Chemistry, 1st place

Madi Dolmagambetov Almira Nurlanova Sanzhar Bisenali PART 1 WORK OF NAZARBAYEV INTELLECTUAL SCHOOLS AEO

Aruzhan Khalikova Assem Kenzhetayeva Dana Baygal Aydana Sarimova Dariya Bakir Assem Kabdulla Amir Almukhanov Zhenis Kosher Amira Artykbayeva Kuanysh Kurmantayev Al-Farabi Turmagambet

Chemistry, 2nd place

Amina Ospanova Zarina Nurzhanova Meruert Seytmurat Makpal Umarova Aknazar Otebay Dana Issagulova Dariya Zhakenova Aysha Seylkhan Laura Serikova Yerassyl Abilmazhin Araylym Satiyeva Akbota Sarsembekova

Chemistry, 3rd place

Aruzhan Seylkhanova Kamila Kuramyssova Nurassyl Amantay Zeyna Bizhanova Altayr Ibray Yersultan Serik Aygerim Shakanova Aygerim Ospan Ansar Abdulla Aygerim Ospan Zhaniya Sagyngerey Daniyal Abdimanapuly Amina Kozhamkulova Ayan Kaiyrbek Ramina Zhandauletova Zhumabek Kalmukhammed

Mathematics, 1st place

Damir Sultanov Alikhan Kyrym-Kereyev Nurtas Bashevev Saken Kussainov Togzhan Nurlan Adilet Abay **Bibol Assetbek** Aknivet Abdashim Dariya Baymenova Rustam Zhumatov Amina Iskakova Adil Agibayev Aliya Anarbayeva Malika Ramazan Sanzhar Sarsembayev Saya Kurmanalina Dias Abzhanov

Mathematics, 2nd place

Beksultan Zholdassov Nurtore Bauyrzhan Alen Sarsenov Sardar Atayev Haknazar Abilda Altynay Akayeva Madi Shayken Akyerke Rakhmatulla Elman Kakharmanov Beksultan Ashenov

Mathematics, 3rd place

Ayaulym Nurgozhina Ayan Beksultan Sabina Maratova Akzhan Turgalimova Batyrbek Baubek Mirat Serik Dilyara Kudaybergenova Orken Murzabayev Ansar Assilbek Saniya Mukhambetkaliyeva Amira Dosmagambet Bekzat Tokbolat Akzhan Kayrliyeva Meruert Andagul Angelina Ilvina Sati Yermakhan Arailym Serikova Assanali Bimurzin Dinmukhamed Mukhtarov Tanzharyk Shambyl Assanali Karim Rakhat Zhakiyenov Diassali Karim Shapagat Zhaiymbet Aysultan Yerezhepbay Leyla Belgibayeva

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Passed for press 19.05.2021. Passed for printing 22.06.2021 Format 84x108/16. Copy paper 80 gr/m. Digital print. Conventional printing sheet 3,78. Number of copies ---. Order № ---

> Printed in PE Centre of Excellence printing house e-mail: info@cpm.kz, tel: +7 (7172) 23-57-49