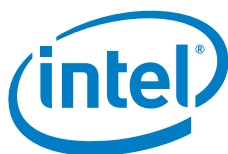


Republic of Tatarstan: Setting the Standard for IT in Education for Russia

SCHOOLS IN TATARSTAN

The Republic of Tatarstan is committed to delivering a high standard of education to its citizens, from pre-school through to university and beyond. Across the region, it includes:

- More than 2,000 schools
- More than 380,000 students
- More than 42,000 school staff



The workplace is evolving rapidly. Game-changing new technologies emerge every few years that continue to drive innovation and impact almost all working environments. To make a difference in this dynamic workplace of the future, employees must have a strong foundation in Information and Communication Technology (ICT) skills. In Russia, the Republic of Tatarstan is working with Intel and ICL-KME CS to ensure its schoolchildren of today become the leaders of tomorrow.

Ambitious Goals for eLearning

"The computerization of schools is very important. Children can't just use textbooks now, but also need to apply new technologies to their studies." These are the words of high school student Diana Galautdinova, an Intel Science and Engineering Fair winner, speaking about the introduction of ICT to her own school in Kazan, Tatarstan's capital city.

Diana's views are shared by many other students, teachers and government ministers in the region. As the Internet and computing devices continue to permeate every aspect of work and daily life, the people and government of Tatarstan have committed to providing their children with the resources and skills necessary to compete in the global workplace.

Victoria Krylova, deputy principal in charge of IT introduction and implementation at School 177 in Kazan adds: "We are well aware that the world of Information Technology is rapidly growing and we have to keep up with it."

In order to meet this challenge, the Tatarstan government has been implementing an initiative called 'E-learning in the Republic of Tatarstan' in partnership with Intel and local original equipment manufacturer (OEM), ICL-KME CS.

ICL-KME CS is a Russian systems integrator which also manufactures and services PC equipment and has worked in close partnership with Intel since 1995. The Tatarstan government designed ICT solutions specifically for schools in the region, including hardware, connectivity, electronic content and IT support. ICL-KME CS held responsibility for providing the IT support as well as assembling Intel-based desktop



and notebook PCs and Classmate PCs for use by the region's schools. Intel education experts work with government officials to provide consultancy and ideas around the use of up-to-date technology and software in the classroom.

Recognizing the importance of ICT in all aspects of society, and particularly in education, the Republic's President himself initiated the launch of the first ICT in education initiatives in February 2010. Impacting half a million users across the Republic, the initiative's objectives are:

- To enhance the learning experience for students of all levels, especially those in rural areas where access to sophisticated educational resources may be limited
- To develop pupils' ICT competencies, making them attractive to universities and future employers at a regional level
- To provide teachers with the modern communication technologies to help them deliver the best quality teaching

Building a Customized Program

The model developed in Tatarstan is designed to involve more people in the digital world and is similar to the Intel World Ahead Program. It focuses on providing schoolchildren and teachers with affordable access to PCs, connectivity to the Internet, rich educational content and training on how to make the most of these resources. The organizations developing solutions that bring education in Tatarstan to life, and empower students and teachers to achieve optimal results using IT and digital resources.

The Tatarstan initiative includes:

1. Computers for Schools:

With the ultimate objective of having 'One Computer per Child', the Tatarstan government has deployed 17,000 desktop PCs, powered by Intel® Core™ i3 processors. The IT Center of Tatarstan now has the capability to remotely manage this PC fleet and help users resolve any issues quickly, even with no IT expert on-site. The introduction of these PCs has already reduced the PC-to-student ratio from 11:1 to 9:1. Schools can also provide pupils with portable, durable Intel Classmate PCs. To make the most of the new PC technology in lessons during the new school year, classrooms will be fitted with supporting technologies such as interactive whiteboards and digital science laboratories.

Kirill Yershov, a 10th grade student at School 177 says: "Take physics. Thanks to online video, our lessons have become much more illustrative. Experiments that we could never see in the classroom can be conducted in other laboratories by experts, and we can see them." In some countries where 1:1 eLearning program is implemented, schools provide students with their own PC, or they invest in carts of 15-25 laptops, complete with power supply and wireless access point, that are taken to a classroom for use by everyone. Their financial aspect is covered by school funds or by parents. While in the Republic of Tatarstan, the government is in charge of this task.

IT DRIVING ACADEMIC ACHIEVEMENT

The schools of Tatarstan are already enjoying an improved level of scholastic performance. For example:

- Students at School 177 won second prize in a national mathematics competition, which included using their PCs for online research and presentations
- During 2010-2011, more than 42,000 school staff across Tatarstan were provided with laptops
- ICT programs have been adopted by all schools across the region
- All school staff, 353,105 students and 242,104 parents now access educational content and resources through school and Tatarstan government portals
- More than 15,000 teachers have received the first stage of ICT skills training in the framework of the Notebooks for Teachers initiative
- 1,900 educator communities have been created in 20 school subjects
- Students have access to 467 elective courses, and 16,361 individuals have already signed up for them

2. Notebooks for Teachers:

While many students have access to PCs and Internet connections at home, most teachers do not have this privilege. With leadership from Rustam Nurgalieevich Minnihanov, the Tatarstan Republic's President, all school staff members are now equipped with personal laptop PCs that help them do administrative tasks and lesson planning at home. This project is the first of its kind in Russia. The Republic of Tatarstan opted for laptops rather than netbooks as they offer the most complete set of input/output interfaces, a larger screen and better performance as well as the possibility to use multimedia resources from all digital media including CD and DVD. This expands the range of digital educational materials available to more than 42,000 school staff members that have received their laptops so far.

Marina Chicherova, a primary teacher at Bolshepolyanskaya School, is a typical user. She says: "Colleagues communicate with each other now by email. We give each other advice and recommendations, and we can design our own materials and

upload them to the "Digital education of Tatarstan Republic" information system and to educational Internet sites. I posted my own lessons on the Internet and my thoughts on how to conduct a parents' meeting." IT Center of Tatarstan Republic and ICL offer support services where teachers with queries about how best to use their devices or online content can get their questions answered by phone, fax, email or SMS. All this is done by CALL-centers, specially created by these organizations.



TOMORROW'S JOURNALISTS AT SCHOOL 177

Some schools are using new technological capabilities to elevate their students' educational experience. Pupils at School 177 benefit from the school's own video studio, called the Quarter, where they script, film and edit their own short films.

In many cases this new way of approaching topics has had a transformational effect. "We even had cases where some pupils who were not very interested in learning, changed their attitude and changed the opinions of others about it too," comments Victoria Krylova, deputy principal in charge of IT introduction and implementation.

The school's principal is Ildar Imamov. He has ambitious plans for the studio: "In the future we want it to be a mini TV station that will include filming, editing and direct broadcast to the local network of 57 TVs."

Budding journalists with a passion for the written word use the school's publishing center. Both the studio and the publishing center require children to make use of their netbooks. Krylova observes: "They love it, it's magical." Imamov also points out that the new technology is helping students build important life skills, such as public speaking, interviewing and analyzing information.



customized training to ensure that those equipped with new devices are quickly confident and proficient in their use. The courses are delivered face-to-face or online by the Republican Center for Information and Methodological Support and Control in Education (RCIMSCE), with support from Intel. Azat Gabitov, Director of the RCIMSCE, says: "Intel provides continuous support and literature, creating opportunities for our tutors to keep improving their competencies."

3. Network Connectivity:

By the end of 2011, each school in the Republic with over 290 students will have fiber optic communication lines. And all schools, regardless of size, now have WiFi connectivity, so that teachers and students can work online wherever they are on campus and maximize their efficiency.

The first stage of the training is in basic ICT skills, and the second teaches project and instructional methodologies. More than 15,000 teachers have been trained to date, with highly positive results. Rosa Nazifovna, deputy director of educational work at Bolshepolyanskaya Secondary School, says: "I came back a different person. The very name of the program implies that it's not just about the study of computer technology, it's about giving our students the skills of the 21st century to help them be successful after high school."

4. Teacher Training:

The Republic operates 51 Methodological Information Centers (MICs) and has rolled out a series of training courses based on Intel's highly successful teacher development program, Intel® Teach. The courses are tailored specifically to meet the needs of teachers in Tatarstan and to align with the 'Notebooks for Teachers' initiative, with

5. Educational Resources:

Every student, parent and teacher is provided with an email address and login details to access a variety of online resources stored on the 'Digital education in the Republic of Tatarstan' portal. These include online study journals, diaries and



TOMORROW'S TOWN PLANNERS AT MANZARAS SCHOOL

Children at Manzaras School in the town of Kukmor have been investigating ways in which they can improve life for their local community.

Elgina Mutigullina is a 5th grade student. "We have a problem attracting tourists to our district, so we made a presentation to attract them," she explains. "We found various presentations and images online, and downloaded them. We then learned how to produce charts and presentations to share what we had found."

It was decided to build a park near to the school for use by local residents, and the students were involved in designing it. Gulnaz Garipova, who teaches informatics at the school, observes: "The project helped the children learn to work in groups. We carried out conferences over the year and students had a lot of practice researching and extracting information from the Internet. This helped to develop not only their knowledge, but also their critical thinking skills."

timetables as well as digital educational content created by experts from Tatarstan and supplied by software provider 'Cyril & Methodius'. The portal, called edu.tatar.ru, is used by teachers to download lesson plans and supporting materials.

Students like Radik Larionov, 9th grade at Bolshepolyanskaya School, find the dynamic content very useful. "Textbooks get reprinted every five years," he says, "but thanks to the Internet we have the most recent data." Meanwhile, teachers and students can use email and online forums to share their experiences with peers nationwide. 12,340 parents even receive updates on their child's academic progress via free SMS. So far, all school staff, 353,105 students and 242,104 parents have signed up to access the online portal.

6. Disabled student access/ Rural access:

In order to provide rural or disabled children, who have less access to fully-equipped classrooms, with the same educational advantages as their urban contemporaries, they are provided with PCs for online learning. 308 disabled children participated in the remote training project in its first year (academic year 2010-2011). The approach can also

be used to provide specialist lessons where a local teacher may not be available.

7. Schools centers of excellence:

To showcase the full potential of ICT in education, the government is working to set up "Schools centers of excellence" in digital education in each of Tatarstan's 51 districts. Each of these schools is fully equipped with the latest technologies including four ICLab Mini - 'Computers-on-Wheels' (CoW) carts with the latest Intel-based convertible Classmate PCs. Each CoW holds enough devices for one class of students. And the four carts are shared by the primary school classes so that all students get an opportunity to use them in a 1:1 eLearning environment as part of a lesson. These centers commit themselves to developing the best computer learning skills and expertise. Students and teachers from other schools in the region can visit centers in the immediate area to learn skills and best practices.

8. Competitions:

Teachers and students are all encouraged to participate in online competitions to demonstrate their competencies with ICT.



TOMORROW'S RESEARCH SCIENTISTS AT GYNMASIUM 7 IN KAZAN

Award-winning research is by no means the preserve of Nobel Laureates, and a successful scientific career can start at any age. Diana Galautdinova is proof of this, having won an award in biochemistry at the International Intel Science and Engineering Fair 2011. Her winning project would have been near impossible to complete without the technology and computing resources available at school.

"I used our Einstein Laboratory, where each student can do research using new devices," she says. "I personally used the spectrophotometer for my experiments. The data it collected was transmitted to a PC, where it was processed and results graphically displayed."

Diana was using this complex equipment to support her research into medicines to combat fungal infections. Having access to online materials and resources helped her significantly, she explains: "It's very convenient to have all the information you need concentrated in one place, and it's such a good opportunity to communicate with people all over the world. There's so much more information online, and better access to new research articles too, so I can better stay up to date with new developments."





The Republic holds an annual contest for teachers to enter their examples of best practices for using IT in the classroom, with the most impressive entries posted online for others to use. Meanwhile, students can compete to be named 'Junior Programmer of the Year' by creating their own software, digital art or website.

By combining the various aspects of ICT usage, schools are helping students learn from a young age, right through to their Unified State Examinations (USE) at the end of the 11th grade. "Preparing for the USE in Russian and mathematics is impossible without a computer," says Olga Isaeva, a 10th grade student at Bolshepolyanskaya School.

Innovating Education for the Future

The partnership between Intel, the Tatarstan government and local ICL, is now well established. "We have a long-standing relationship with the Republic of Tatarstan that stretches back over six years in the field of education and teacher training," comments Julia Klebanova, Regional Enterprise Business Manager, Intel Russia & CIS. "This has given us a great foundation on which to develop these latest projects, but which will also enable us to continue delivering innovations to support the region's students in the future too."

The staff and pupils that have adopted the Tatarstan E-learning project recognize that it heralds a significant change in the way students learn and teachers teach. Ildar Imamov, principal of School 177 puts it best: "I would like to stress that the use of computer technologies in general is not our end goal. We are not just striving to show that we have this technology but to use it as a tool to help us and our students solve problems quickly and effectively. With these technologies the quality of education we deliver will improve."

The value of these changes is also seen by pupils' families. Nuriya Akhmetsafina's son attends Gymnasium 19, where Classmate PCs have been introduced. She observes: "This is completely new technology for our school, even for the whole city. On the first day my son came home and said it was the best day he had had recently. The children see these new

TOMORROW'S MATHEMATICIANS AT SCHOOL 177

Elena Saifutdinova teaches math to secondary school pupils and has seen her students' understanding of the subject—and its relation to other areas of life—grow significantly since the ICT initiative began. "This year we participated in an all-Russian contest in a wiki environment," she explains, "and the team from our school won second place." The students were tasked to prepare and give a series of presentations, and much of the research took place online, in collaboration with children in other cities. She continues: "Can you imagine, the whole of Russia participated in the contest and the children talked to each other using IT – it's great, isn't it?"

Teachers communicated with each other as part of the competition too, including participation in an online methodological seminar to share ideas. Other teams' projects were shared online so that participants could see others' materials and understand where and how their own work could be improved.

"Math is so versatile," says Saifutdinova. "We've worked on topics around math in games, sport and even in music." With access to more and varied teaching tools online, she and her colleagues can make the subject relevant and engaging for more pupils.



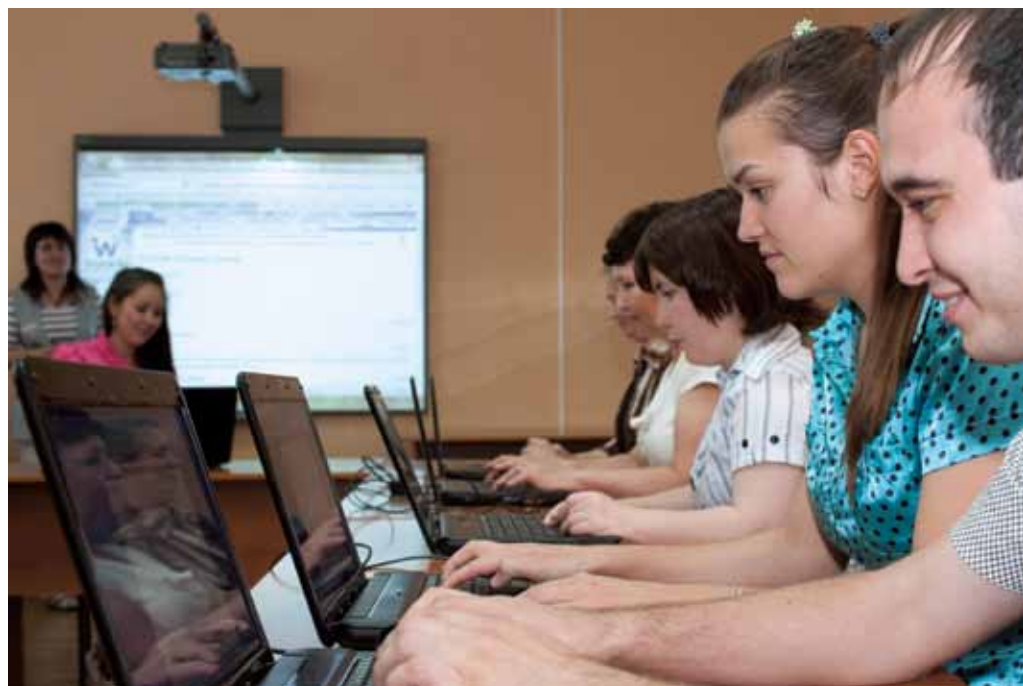


opportunities to communicate and obtain new information and it's a good incentive to their further development."

Buoyed by these successes, the Tatarstan Ministry of Education and Science is now looking to expand the program to more schools across the region. While 708 schools have already adopted ICT initiatives, further adoption is anticipated. Tatiana Kamaletdinova, CEO of the IT Center of Tatarstan Republic, comments: "In the next school year we believe that 100% of teachers in all schools will be participating in the information system 'Digital education in the Republic of Tatarstan', and in the future all paper work will be computerized, with hard copies no longer being used."

The qualitative benefit of the program for students has also been realised, notes Nikolai Nikiforov, Deputy Prime Minister and Minister of Information & Communications for the Republic of Tatarstan. "I see a serious difference at the moment in the quality of teaching in large cities compared to low-enrollment rural areas. I believe that introduction of remote technologies for eLearning will help to reduce this gap."

Albert Gilmutdinov, Minister of Education and Science of the Republic of Tatarstan, concludes: "It is recognized that we've created a computer revolution in the Republic of Tatarstan. Everybody sees that we've been advancing so fast that we cannot really be restrained any more."



Call to action

What is your vision of the world ahead?
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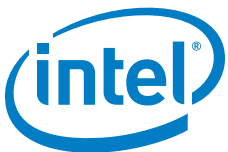
For further information about how technology can help increase the quality of education, visit

www.intel.com/worldahead

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To learn more about educational initiatives in Tatarstan, visit

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