SKOLKOVO
Moscow School of Management

T-UNIVERSITIES

SKOLKOVO
Moscow School of Management

TRANSFORMING UNIVERSITIES

T-universities (transforming universities) are proactively changing their modus operandi. As a rule, this involves visionary leadership and focused work aimed at shaping a new strategy.

Editor-in-Chief: **Vera Volyanskaya**

2019

Vera Volyanskaya

Editor-in-Chief of the T-Universities report
Researcher and Analyst of
SKOLKOVO Education Development Centre

EDITOR'S LETTER

The current way universities are run is frequently taken for granted, and it is difficult to imagine that things might differ from how they have always been. Universities enjoy striking institutional stability. On the one hand, they are capable of outliving changes of political regime and socio-economic realities, while inertly retaining their structure. On the other hand, they are capable of changing radically, while at the same time ensuring continuity and maintaining their unique identity.

Intense transformational processes in Russian higher education only started several years ago, in the mid-2010s. It goes without saying that major projects in Moscow and Saint Petersburg created from scratch in the 1990s, as well as a number of targeted initiatives implemented at established higher education institutions are frequently discussed. At the same time, however, very little is known about the new projects outside of the spotlight.

This is due to the deferred effect: unlike the business environment, in higher education the impact of transformation of teaching or research cannot be assessed rapidly. In addition, it is deemed improper to talk about administrative successes in academic environment, unlike, for example, new research findings. Finally, in the flow of mundane tasks it can be hard to keep track of the initial ambition and the fact that you are doing something major.

On the pages of this report we talk about **T-universities – transforming universities**, where teams of visionaries are working on systemic changes. Here we are only talking about the ones we know in person, where we participated directly in the strategy development.

Our report is intended first and foremost for transformational university leaders. At the same time, however, it will also appeal to anyone interested in the development of Russian higher education. In addition, if it is possible to change standard practices and conventions at universities – organisations known to be unwieldy – then this experience can also be transferred to more flexible sectors.

T-Universities starts with Dara Melnyk's panoramic overview of key trends in international higher education, continues with a description of the landscape of Russian higher education from Andrei Volkov and advice from Olga Nazaykinskaya for transformational university leaders. At the heart of the report are five cases of change management projects in different universities prepared by Viktoria Aleeva and myself. Finally, at the end of the report you will find information about SKOLKOVO Education Development Centre (SEDeC).

We did not set the objective of demonstrating conventional success stories. Working in dialogue with actual transformational teams, we

tried to show the entire sequence: the problem, the search for solutions, what has worked out, and the difficulties that still have to be resolved.

We hope that everyone contemplating a change project at their university recognises themselves in these texts. The difficulties faced on the road to the transformation are not unique: in all instances you will have to deal with internal resistance and administrative complications. The possible solutions are not unique either. We hope that **T-Universities** will help you on your journey.

TABLE OF CONTENTS

WHAT IS HAPPENING IN INTERNATIONAL HIGHER EDUCATION?

The university community is used to looking at national systems as isolated islands: the archipelago of American universities, the atoll of rapidly growing Chinese universities, the island of Russian universities. This creates the illusion that each system faces its own unique set of threats, while trends are no more than viruses spreading to "us" from "them". This is not the case.

Dara Melnyk
Head of the research group,
SKOLKOVO Education Development Centre

In international higher education, everything is intertwined. First and foremost, genetically. Such diverse systems as the Russian, American and Japanese higher education systems have common Germanic roots. Sectoral universities and the Academy of Sciences initially came to us from Europe's Age of Enlightenment, and were subsequently copied by China half a century ago.

In addition, just like any other organisation, the University has its own set of specific characteristics and tasks: during each era perform more operations with knowledge and do it better than any other organisation; speak the inconvenient truth; form a worldview. Ideas on modifying universities may not only spread like a virus, but also emerge in different places at the same time. For instance, the concept of a research university arose in the 19th century in both Prussia and Scotland.

Finally, top higher education institutions are part of the common network incorporating both ideas and people.

This network is becoming more and more close-knit due to international cooperation and competition.

In this common space two macroprocesses are most perceptible: internationalisation and localisation.

Internationalisation

The first universities were universal. Of course, global higher education splintered regionally on religious grounds. However, within the network of one denomination, you could travel virtually unrestricted. Take one example, a Catholic university was universal for Europe as a whole; students and professors would make a pilgrimage from Bologna to Paris and from Prague to Vienna for the sake of academic discussions. National universities started to appear in the 19th century. Internationalization of higher education started at the same time. Having accelerated at the end of the 20th century, this process continues to gain momentum today.

The number of mobile students and faculty is growing relentlessly: whereas there were fewer than a million international students in 1975, now there are about six million. Each year new forms of international university collaboration appear. Sometimes, new institutions are founded as a result of such partnerships, such as Cornell Tech in New York – a collaboration between Israel's Technion and America's Cornell University; or Duke Kunshan University created jointly by Duke University and Wuhan University in Kunshan.

Nation states are meeting the goals of higher education with the assistance of other countries. They send their students to study abroad or invite international branch campuses in their countries – specifically, this is how a number of Asian countries, which don't have strong universities of their own, such as the Philippines, Cambodia or Thailand, operate. They borrow models, practices and policies: the idea of centres of excellence, performance-based funding or corporate governance. They poach talent from each other.

At the same time, competition is growing in higher education – for intellect, research contracts, and global influence. The last time a major reshuffle occurred in the middle of the 20th century: German universities, which had determined the spirit and course of higher education for a hundred years, gave ground to American research universities. And now the USA is also gradually losing out. It looks as if it will no longer rank first in the new era of higher education. If that is the case, then who will take the crown? Israel? South-East Asia? Northern Europe? Or, unexpectedly, Eastern Europe? It is highly likely that everything will be more complex and variable, with world-class universities throughout the noosphere and multiple "frontiers of knowledge" intertwined in one network.

For the time being, however, there are clear central systems of higher education, and peripheral systems. Different countries are working proactively to break out of the periphery or to consolidate their positions in the centre.

This has led to the appearance of academic excellence initiatives aimed at increasing international competitiveness. At present they have been launched in several dozen countries. Internationalisation is factored into their design as a necessity. Thus, paradoxically, to become a good national university and to position your country as a place with a cutting-edge knowledge industry, you need to go global.

In addition to nation states, a number of other parties are interested in internationalisation. Firstly, students. Internationalisation of the curriculum implies that you will be able to use the competencies that you obtain in any national space. This guarantees global demand and increases significantly your chances of finding "your" place. Secondly, the research community. Scholars are global and mobile, for science has no national borders. Some universities and members of the expert community perceive internationalisation as the restoration of the natural order, a return to the university of yore. Finally, international and even local corporations increasingly need employees with a global mindset.

On the other hand, bans on foreign education started in the European space at the same time as the Reformation. Students were prohibited from studying in other regions, owing to concerns that

they might pick up foreign ideas and values. Things have not changed all that much. Ideologically, universities still live on the cusp of conflict between globalism and national security. On the one hand you have international conferences, on the other hand – bans on contacts between the researchers of different countries. On the left – attraction of international students and researchers, on the right – suspicion that they may be guilty of espionage. Today, the news about extreme manifestations of such duplicity can be seen everywhere: from Australia to India, the USA to China.

In practice, it is hard to become a global university by adding a global dimension to the national one. An action plan is needed. This is something that higher education institutions from the periphery systems often do not have. Most governments don't have internationalisation strategies. In different regions, however, there are special organisations such as NAFSA (National Association of Foreign Student Advisers) for North America, EAIE (European Association for International Education) for Europe or APAIE (Asia-Pacific Association for International

Education) for Asia, which set the standard for internationalisation practices. An international expert community is being formed, which is developing the theoretical and practical rationale: internationalisation of higher education is needed, because this is required by organisations dealing with knowledge; it is needed, because it raises quality by an exponential factor. More and more university leaders are starting to think about playing at a global level, and this may well be the most significant development today – university transformation has always been preceded by transformation of the imagination.

Localisation

The first universities were a counterbalance to the surrounding socio-economic reality. They were responsible for the retention and transfer of knowledge, for comprehension of the essence of things, but not for the transformation of the surrounding space. Medieval universities were part of a city and at the same time its antithesis. Students would wear robes convenient for reading in cold premises dissimilar to the daily clothes

of town dwellers; they would converse in Latin, and not in the local language, and follow their own rules.

After the industrialisation of the 19th century, universities radically expanded the range of fields of study and started discharging state objectives. By the end of the 20th century their presence began to be felt even by people who had never been on their grounds. And today universities consciously assume some of the responsibility for the development of their loci – as partners for the government and business, the cores of innovation clusters, and the "motherboard" of the knowledge economy.

In the Western world, the shift occurred several decades ago. More and more students and higher education institutions appeared, the cost of research increased, while state funding declined. Higher education institutions started earning money independently – from education and training, R&D products, rent, organizing local events. At the same time, policy in the higher education sector latched onto the trend of decentralisation, which has appeared in more and

more countries: France, China, Brazil, etc. Certain universities and regions were granted greater management authority. The more authority granted to a region to manage higher education institutions, for example, through a supervisory board, the greater the actual influence on regional development that it is expected to exert.

The more autonomous a university becomes, the more accurately it can determine its priorities, and the more it is inclined to engage in strategic work with partners. In short, the more it can do.

In the 21st century, being the source of growth has become the university standard. One can cite as an example the University of Twente, which undertook to help organise the transition of the Netherlands to a circular economy, creating intelligent manufacturing systems, information and communication technologies, new business models and smart materials. At the same time, as a rule, there is not one, but a whole network of universities working closely at the centre of innovation clusters.

The organisational structure of higher education institutions is changing. The establishment of centres of excellence (frequently – interdisciplinary) responsible for major challenges, is rapidly expanding all over the world. Knowledge and technology transfer centres are being created everywhere.
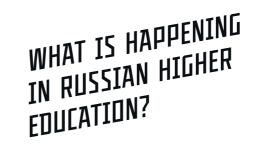
At the level of the pedagogies, real projects are being implemented all over the world. Today such projects are no longer an educational innovation, but are instead considered the standard form of preparation and at the same time a way of providing students with an opportunity to take real action to change reality in the here and now. Real projects underpin the methodology for most greenfield universities and are becoming a lever for transformational processes at brownfield sites. In particular, this is how the program NEET (The New Engineering Education Transformation) at MIT, "tracks" at Chalmers University of Technology, the innovative Station1 in Massachusetts and the London Interdisciplinary School are structured, as are new Russian engineering educational projects, including the Higher IT School and HES EG presented in this report.

Universities are becoming multi-trajectory, disseminating their educational and transformational scope to the broad palette of society. They are launching professional education programs tailored to the specific needs of a region, offering open lecture halls and delivering short courses. Regional universities are building elite education programs – the School of Advanced Studies discussed in this report has numerous counterparts in both America, Asia, Europe and the Middle East.

In order to actually become a regional driver, the university must be included in the global intellectual network, as otherwise it will have nowhere to draw on new practices and theories.

And to do so, it has to be of interest to other higher education institutions – possess unique expertise. Aalborg University of the small Danish city of the same name is famous all over the world, as it is an expert centre of PBL (problem- and project-based learning). The positioning of Amazon Regional University in Ecuador (IKIAM), created to develop the Province of Napo, is based on its geographical location: IKIAM

is located in the jungles of the Amazon, in the centre of the world's largest natural laboratory of biodiversity.

Even as they become more open to the surrounding environment, universities still differ from this environment. They must be the source of new meaning, culture, norms; both eternal critics and inspiration. As intellectual centres, universities in any country must be brighter and more exciting than any other public institution. They must always be one step ahead. And as long as they are, they will matter. Both globally and locally.

Andrei Volkov
Academic policy advisor,
Moscow School of Management SKOLKOVO

WHAT IS HAPPENING IN RUSSIAN HIGHER EDUCATION?

Many perceive higher education as a social sector. Its conservatism is reinforced by the demands of the older generation: "it should be as good as it was in our day". From the outside, it appears that universities stand motionless in time: every year a new flow of students passes through their walls, professors give the same lectures on the same topics, the system of governance doesn't change. The mass media talk about rankings and the "overriding ignorance of the current generation".

But if you look from the inside instead, what will you see? Over the past fifteen years higher education in Russia has been transformed into one of the most dynamic spheres. Transformational processes are gaining momentum, if only among a relatively small group of leaders. It is all the same fascinating that the strongest universities worry about their future the most: over the past five years this leading group has become aware that it is at the bridgehead of global competition.

International competitiveness

Whereas for France the "ranking shock" occurred in 2003, for Russia, it happened in 2013, immediately after the launch of the Project 5-100. We are witnessing a shift in focus towards global competitiveness. However, this shift is driven more by administrative pressure than the underlying logic of advancement. Moreover, the situation at Russian universities is contradictory. Similarly to a number of other countries, different government structures are demanding different things: some are pushing for globalism, while others are advocating national spirit.

- The most important step towards international competitiveness was the launch of the Project 5-100 in 2013 – a special initiative aimed at ramping up the ability of Russian universities to compete with their counterparts in other countries. Another Project's goal is to create an internal benchmark group for Russian higher education institutions. In this sense, 5-100 universities serve as national laboratories for trying out new approaches and models.

- Russian universities are demonstrating considerable growth in the rankings and increasing dynamics in general. Compared to other countries, our speed of change is extremely high, and this is promising in the light of the necessity to rapidly adapt to the new realities in the race for intellect.

- Ambitious plans to increase the number of international students and researchers is also a good sign. If the task to attract 450,000 foreign students set in the May 2018 Presidential Decrees is met, every tenth student in Russian higher education will be international.

However, there are still causes for concern.

- For the time being, it looks like we plan to attract international students and professors without changing the actual organisation of our universities. Neither the ideology nor practice which can set standards for internationalisation have been formed.

- The financial standing of Russian higher education institutions is still fragile. As a result, they cannot be equal partners for major objectives and projects.

- The overwhelming majority of Russian universities position themselves internationally from the perspective of compliance, the copying of existing practices, and not dialogue. They can only achieve leading positions by starting the process of entering into communication about the model of the university of tomorrow.

- To become a country with best practice research and education, the regulatory system has to change: centralised system of quality control must be replaced by quality assurance based on peer review.

The new role of universities

Russian universities did not react immediately to changes in the socio-economic construct, and we are still dealing with the rudiments of the Soviet education system. In the new reality, universities must be transformed into innovation centers and participate in improving living standards proactively – not only by preparing graduates for local industries, but also by exerting a direct influence on the socioeconomic environment.

- A number of higher education institutions are starting to perceive themselves as urban universities and are transforming themselves into platforms for the interaction of actors in the planning of urban and regional development. Such ambition has been demonstrated, for example, by the Higher School of Economics, Moscow City University, Tomsk State University, the University of Tyumen, and Irkutsk National Research Technical University.

- In turn, regional governments are starting to participate in university governance, for instance through participation in supervisory boards. This phenomenon has become perceptible over the past few years, and the trend is growing.

- As is the case in other countries, there is a demand in both regions and also at the universities themselves for closer cooperation among higher education institutions, and also between these institutions and other actors. Specifically, the idea of a unified Tomsk University, which would bring together over 50,000 students has been actively discussed recently – the higher education institutions would be pooled into a consortium, and at the same time retain their organisational autonomy. Plans are being discussed for closer cooperation among Tyumen's universities. The 2018 initiative to create research and educational centres (knowledge economy regions) is to date by far the most promising attempt to create innovation clusters in Russia. Groups that traditionally have failed to find common ground: business, R&D institutes, the government and

the university community – have for the first time entered into close communication, discussing joint actions aimed at regional development.

At the same time, however, barriers remain that have yet to be overcome.

- Network cooperation is being hindered by regulatory restrictions and outdated funding mechanisms.

- Technological entrepreneurship is still being interpreted as technical knowledge, and not as the ability to take independent risk-based economic actions. And, most importantly, we need to erase the longstanding delusion that entrepreneurship is alien to the spirit of the university environment. Entrepreneurs and academia both value personal freedom, the ability to take risks and imaginative solutions. The learning process should constantly provoke independent action. Entrepreneurship feeds on the same practice.

- The industry-specific structure of higher education must be rejected once and for all. Only comprehensive

universities can have a material impact on the economy. They can respond to societal challenges by creating a multidisciplinary program for problem-setting, involving different actors to generate possible solutions, and then turning to schools of governance and law to prepare a plan for the dissemination of innovation and develop policies and legislative solutions.

New university policies

To perform new functions, universities need to change their operating modes. T-universities are proactively reinterpreting their policies in the areas of teaching, research and innovation, while other universities are starting to use their practices as the standard.

- **Teaching.** The most important trend is the emergence of educational experiments: new interesting programs and greenfield units are appearing. Their activity is organised differently from the remaining space of the university. One can cite as interesting examples the cases from Tyumen and Tomsk described in this report. Project-based learning is also becoming more common.

In a number of higher education institutions general education is being introduced in undergraduate programs in lieu of excessive specialisation.

- **Research.** Over the past five years universities have begun to position research at the centre of their policies.

- **Innovation.** Attempts by universities to launch the innovation process are becoming more and more relentless. The concept of innovation has become an integral part of the missions of universities and is starting to be perceived as an integral component of their vision for the future. Rhetoric is gradually being converted into activity.

There are roadblocks here, too.

- **Teaching.** Innovative teaching is impeded not by a shortfall of funding, but by outdated standards and the practice of interpreting them for quality control. Top universities must make the transition to their own educational standards. It is also time that we reject the state-recognized diploma. Universities must assume responsibility for the quality of their

education and work on the reputation capital of their brands.

- **Research.** The number of professional researchers is falling, and this is particularly perceptible when juxtaposed with other research-focused countries. We are still suffering from brain drain. A premium must be placed on academic mobility – intellectual renewal through the diversification of research schools. Researchers must constantly hone their ideas and methodology through communication with the proponents of other ideas and alternative approaches. Doctoral education must be reimagined as the professional preparation of researchers with scholarships competitive on a global level.

- **Innovation.** The idea of "implementing" innovations and making innovative activity compulsory must be rejected. Universities should form partnership with business, including companies created by their faculty members, students and developers.

Independent thought and autonomy

The University is an institution that creates and critiques knowledge. That is why nobody can force universities to work in line with predefined standards. They must be autonomous.

Only once universities assume responsibility for their own development they will be able to start mutually advantageous partnerships with the industry, offer outstanding education for students or govern research meritocratically.

- A number of universities have started to determine their own priorities and create sophisticated strategies.

- Transparency is increasing: students, faculty members and external stakeholders have become a little more of universities' trajectories. In some instances they have become involved in further development plans.

- Transformational leaders have started appearing at universities. Their number must grow, and we must

turn to them for further advancement of our higher education.

There are both internal and external barriers to university autonomy in Russia.

- **Internal constraints.** In the case of most higher education institutions, university autonomy is not a value; stable funding is more significant. Their missions are formal, while there is only one real stakeholder – the ministry.

- **External constraints.** The regulatory environment, even outside the quality control system, places restrictions on the development. The set of criteria for the position of the rector, reporting requirements and much else besides, must be revised.

Olga Nazaykinskaya
Director of SKOLKOVO Education Development Centre

GREENBOOK FOR THE TRANSFORMER: HOW NOT TO LOSE THE WAR OVER DEVELOPMENT

Universities begin to transform when a specific problem is being tackled by an individual who assumes responsibility for the development of the university. This individual is the transformer. The transformer's actual title – rector, dean or a faculty member – is almost irrelevant. There is no doubt that a position of authority is important, but only at the implementation stage of the transformation project. During the establishment of the concept and design, personal traits of the transformer are far more crucial – the ability to see the university as a whole, perseverance and the readiness for change.

I am addressing this text to transformers – to everyone who has already embarked on the complex path of development of their university or is only preparing to take this step.

Unfortunately, on this journey you will frequently lose your footing. This is normal. The advice here may help you map out a better route, and make your crossing faster.

1. Look for the problem. If we are talking about transformation, you need to work on the actual problems, and not go with readymade ideas and off-the-shelf solutions. If you fail to pinpoint the underlying reasons for the current situation, you risk discovering subsequently that even the most competent and correct solutions were superficial, as they did not actually resolve the problem.

25

How does the problem differ from various complications? It is often the case that we talk about self-explanatory difficulties: there is no money, there are no people, the staff are "outmoded", the programs are obsolete, we cannot do anything owing to federal educational standards, the students graduating from school are not that bright – those are all symptoms. You need to understand why this happens, how activity is structured at the organisation, how the processes which allow this to happen are structured. And as soon as we find the problem area, we need to start working with it.

Here it is worthwhile answering the question "why?" several times and work out the structure of this "why".

2. Draw a picture of the situation for yourself. You need to understand the situation that you are in specifically, and in particular have a good understanding of all the positions committed to what you want to do. Take a sheet of paper and sketch the landscape of the situation: how things work both inside and outside your organisation, where your place is, and what the problem is; map out the interests and contexts of customers, participants and stakeholders.

Any transformational actions violate entrenched organisational, social, financial and other connections. This is what you have to always keep in mind.

3. Articulate your ambition.
Ambition is the precise understanding of your target position on the market and field of activity. You must not treat it lightly. The ambition should:

a) be based on a substantive idea (not simply "I want to be in the top 100 of global rankings", but "what I want to do and how I want the university to function that will enable us to be in the top 100");

b) be precisely and accurately formulated and parameterized, otherwise you will never understand whether you are achieving your ambition, and whether you are going in the right direction.

4. Work not only on the concept, but also on the organisational project. It is not enough to propose a good idea – you need to plan its implementation. Most of your time and efforts will not be spent on the development of the actual project, but instead on the drafting of the project implementation plan. It is like assembling furniture: you have a drawing of the cupboard, but you also have an assembly diagram (instructions on how to assemble the cupboard), and if it has been drafted incorrectly, you will never be able to assemble the wonderful concept of the designer from the various component parts.

5. Build a team, however banal that may sound. Here a team is not a group of people you find friendly and agreeable. It should be a functional machine with log reports. By log reports I mean not the technology of "do once, twice, three times", but instead a description of the principles of this work: how you formulate and communicate the idea, how you allocate and synchronise the work among members of the team, how you engage in reflection. However, it is not enough to simply assemble a team, you also need to behave like a team. Unfortunately, only a few people can differentiate between the working practices of a team and standard staff or administrative practices. Owing to the mixing of these genres, a number of enterprising groups and project endeavours fall apart.

6. Talk to people. There is nothing more effective for common understanding than consistent work to build communication with different groups of co-participants. You should be ready to take on the "burden of communication" consistently and structure interaction accurately at all levels: the rector's office, the supervisory board and the board of trustees, the academic council, colleagues, student communities. You will have to find the right approach for each audience, clarify the concept, goals and tactics. In addition, you must not be afraid of answering hard-hitting questions and reacting openly to provocative displays of resistance. This tough process necessitates substantial time costs, energy and emotion, but is essential, as management of transformation requires the alignment of communication with all participants engaged in the development process.

7. Take the heat. You will endure a lot of criticism, and it will hurt. This

is normal: nobody likes transformers, as they interrupt the calm routine and rhythm of life. In response people fire up defence mechanisms – they attack, become aggressive and negative. The key is to stop (or not even start) worrying and to learn to work with this. Furthermore, you will immediately have to work at three levels:

- **emotional** – don't react, don't give other people an opportunity to manipulate you through emotions and social conflict, transfer everything to meaningful action;

- **physiological** – you will have to change your lifestyle (regime, sport, nutrition, check-ups, discipline), otherwise your physiology will rapidly be undermined due to the excessive workload and stress;

- **substantive** – always be the one who remembers why you are doing all this: stick to and follow the plan, and communicate it to everyone else.

All the above concerns any transformer, regardless of the position that they actually hold at the higher education institution.

However, if you are a rector or a decision-maker, then your transformational position is also aggravated by your responsibility for people and for the creation of such change leaders as yourself. These additional five tips are for you to make sure that the most lively and proactive change-makers serve as "lightning rods" at your university; so that they not only discuss, but also implement their projects at your university.

1. First of all, cast aside all illusions that change leaders appear out of nowhere. I often hear rectors say that they can't find anyone capable of taking on the development challenge. They say: "If I found such people, I would move heaven and earth!" At some point in the conversation it becomes clear that: a) nobody has systematically looked for them, b) similarly, nobody has been preparing them for this role specifically.

As you cannot simply wait for transformation leaders to appear naturally, you have to look for them, and nurture them.

However, it is important to look through the right glasses. If your employees only

work operationally, they simply don't have an opportunity to prove themselves in development issues. To find people who are potentially innovative, you need to establish special conditions under which they can display their creative side. Hold an internal seminar on the development of the university, and let everyone express their views. Hold an ideas competition. Initially, you may not be satisfied with the quality of the ideas. However, here the point is not the ideas themselves, but rather the diagnosis and identification of potential change leaders.

Junior staff or even students are an excellent source of designers of the future university. Involve them in strategic discussions. Frequently, young proactive professionals fly under the radar, because they are too far from the rector, and pose a risk for middle management. The latter hide them from senior management and dispose of them rapidly, encumbering them with routine work and inducing an inferiority complex in them. It is useful to hold open competitions, instead of asking middle management to identify "promising candidates" themselves.

The identified candidates must not be left working on routine assignments for long: they need to be assigned new roles and systematically trained in transformational tasks. This means creating situations with a heightened risk, limited resources and the lack of ready answers – in other words, problematic situations.

2. Never be afraid of engaging outsiders. Another culture, a different position, fresh energy, may not only prove useful per se: they can also awaken local dormant innovators. When inside an organisation, people are rarely capable of perceiving it objectively. We are accustomed to existing norms and processes and try not to question how our activity is structured – such is human nature, we seek stability and calm. You often need a view from the outside in order to be able to perceive yourself and your organisation critically.

3. Trust and acknowledge publicly. Both successes and failures. The trust of the rector is a key motivational factor. This is more important than money and status. Your personal participation in work with a team of young designers is important. They must have direct access

to communication with the rector. Ideally, they should constitute your "strategic headquarters". It is also extremely important that the top figure congratulates the successes of transformation leaders in public. However, if mistakes were made – they should also be acknowledged publicly. Otherwise everyone will be discredited: both the rector and the new generation of reformers.

Don't give up on transformers because of one mistake.

You need to understand that people grow and change, you must not brand an individual as a failure after the first setback, and all the more so, write off the entire idea of transformation. At the same time, however, it is also not a good idea to pretend that nothing has happened, as if you are offering moral support to your colleague. It is important to understand the reasons for the setback, discuss the point when everything went wrong, revive the concept and the subsequent course of events, however painful this might be. At the same time, it is not enough to just document this case – you need to agree on how you will move forward.

4. Risk and implement. You need to remember that the key to recognition is implementation of projects. If you are not ready for a radical change – allocate a test site, and authorise the launch of a pilot project. This must be a serious venture, with the allocation of all the necessary responsibility and authority, and should not be implemented in some game or training format. If it was a deserving development, but was not implemented, or implementation was not entrusted to its author – this will represent a serious setback. As a rule, if such a decision is adopted, the young people enthusiastic about the project will either leave the university within six months to a year, or become disillusioned and stop trying to change anything. In addition, other people who might have become the next change leaders will become disillusioned as well. If you are not ready to take risks – then don't even start engaging young people in your initiatives.

However, if you are ready, don't offer only moral support, allocate resources and give the transformers authority. Serious change cannot be achieved based on sheer enthusiasm alone. Don't allocate resources

and authority as an "advance". They must be allocated for a specific project.

If the transformation leaders manage transformation outside of their working hours and without a budget, then all their ideas will end up unrealised.

5. Learn how to let people go. You need to get used to the idea that people grow and their trajectory should extend beyond the boundaries of the university. The more innovators you grow and let go, the more people you will have in partner organisations and projects, the more attractive you will become as an employer and as an organisational leader in transformational processes.

T-CASES

Технолог, Предпринимательство

Те фронтир

Industry

ИНДУСТР. ЗАКАЗ

ПРЕДПРИНИМ. ЭКОСИСТЕМА → ВКР
→ Electives

Технолог институт

НУ М-ка Те Продукт

ФУП 50/50

70/30

Ф/О
G/M/D

ИНЖЕНЕР

University of Tyumen: personalized educational tracks

PERSONALIZED EDUCATIONAL TRACKS: THE NATURAL PATH FOR THE STUDENT AND AN OBSTACLE COURSE FOR THE UNIVERSITY

Viktoria Aleeva
Analyst, SKOLKOVO Education Development Centre

The implementation of personalized educational tracks (PET) is the largest reform at a brownfield university[1] in Russian higher education. While a number of Russian higher education institutions have elements of individualisation, to date the PET system has not been fully implemented at any comprehensive university. The University of Tyumen is blazing a trail and, like any trailblazer, is encountering unforeseen obstacles.

What is wrong with the educational process in Russian universities?

In the past, the University of Tyumen was a specialized pedagogical institute, training school teachers. Today, however, it is one of the most dynamic Russian universities. In 2015, the University of Tyumen became a participant of the 5-100 Project[2], and subsequently launched transformational reforms

1. The term brownfield denotes higher education institutions with conservative practices and policies in administration and teaching.
2. Russian academic excellence initiative.

which affected all basic processes. One of the biggest decisions was to change the educational model.

The existing educational model of Russian universities is de facto a slightly amended Soviet model for training specialists that is called an "educational pipeline" by experts and means a predefined sequence of courses that every student is required to follow strictly. In 2003, Russia joined the Bologna Process to harmonise with the European space of higher education. The only change was that the "pipeline" was split into two levels – bachelor's and master's.

The Soviet model of education was engineered to meet the need for the continuous "production" of specialists for industry. Now the objective has become more complicated: you need to prepare people capable of determining their own place on the market. At the same time, the model has not changed. Alarm bells are ringing in the university community: the educational model is not working, but there is no national consensus on how to change it.

A task force was formed during the University of Tyumen strategy sessions. The team decided that in the new world it was necessary to prepare people who can transform the economic and social environment. Such an ambition cannot be implemented within the current model. This was the beginning of changes to the university's curriculum.

Back to basics

The individualisation of education is not a new concept. It has been in use for about eight centuries. Back in the time of the first

Source: University of Tyumen / Denis Zinoviev

Alexander Sannikov, tutor

Yana Smagina, Project Office Manager

Maria Kositsyna, Project Office Manager

Nadezhda Fedorova, Head of the Department of Personalized Educational Tracks

Valery Falkov, Rector

Taisya Pogodaeva, Vice Rector

Svetlana Birvert, Head of Project Office

Andrey Rusakov, Head of the Center for Tutoring

Source: University of Tyumen / Denis Zinoviev

University of Tyumen: personalized educational tracks

Valery Falkov
Rector of the University of Tyumen

Taisya Pogodaeva
Vice Rector of the University of Tyumen, Head of the Project for the New Educational Model Implementation

"We set ourselves the ambitious objective of creating mechanisms and tools for the individualisation of education throughout the university, so that each student can construct a personal trajectory of development. This will serve as the basis for the new educational model of the University of Tyumen for many years to come. This is what the state and society are calling on us to do. Employers will definitely be pleased that we are preparing our students better. By default, that will influence the appeal of the university" *Rector of the University of Tyumen Valery Falkov for the information agency* Tyumenskaya liniya.

"In 2015, the University of Tyumen started designing a new educational model based on global best practices where individualisation is considered the key principle of educational policy. In our case, individualisation is not limited solely to the selection of subjects, as otherwise it could be claimed that individualisation also exists within the "educational pipeline" [where you have a very small number of electives]. The university's curriculum makes it possible to form a "selection menu", not only of study courses from different disciplinary sectors, but also provides an opportunity to select educational formats, forms and methods of work with content, as well as the actual content"

"PET is a straightforward line that leads students to the frontiers of contemporary knowledge and professional practice. It is straightforward in the sense that the more convoluted it is from the perspective of the university and the administrators of the educational space, the more direct it is for students. The greater the number of turns the student makes, the shorter their path to achieving learning outcomes"

Nadezhda Fedorova
Head of the Department of Personalized Educational Tracks, University of Tyumen

European universities, education was equated to an individual path where a student would choose and assume responsibility for this choice.

Industrialisation shook up the world of higher education. A number of universities tried to apply factory-style student training. Today, global higher education is gradually returning to its roots.

In September 2017, approximately 1,000 first-year students of the bachelor's degrees of four institutes of the University of Tyumen opted for the new educational model – personalized educational tracks. In September 2019, all the first-year students of the university, or approximately 3,000 students, began their studies in this format.

In the Middle Ages, students would travel from country to country to acquire knowledge from various scholars. This principle underpins the new educational model of the University of Tyumen. The students not only learn from the faculty of the University of Tyumen, but also from the representatives of other universities, both Russian and foreign. Firstly, this provides students with an understanding of what the term "university" means in a broad sense. Secondly, it demonstrates

that research at the University of Tyumen is relevant to global and national agendas.
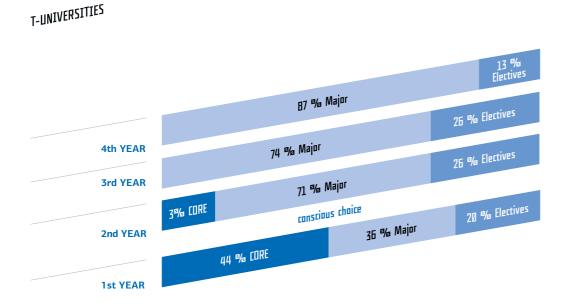
PET: mechanics[3]

Students studying under the new educational model can independently form their own individual study plan by selecting electives from over 200 options, together with compulsory courses. This implies that there are no standard study plans and stable academic groups within PET. Groups of course participants are formed independently for each course or a part of the course. In the first year alone a student becomes a member in 10 academic teams. Students often come across unfamiliar faces on the courses.

CORE MODULE

Core (Core Curriculum), the educational "core" or the "core program", is the most common format for implementing the general educational unit. Core implies a unified set of courses for all students of bachelor's degrees with the goal of establishing a general intellectual and cultural framework – that is why courses such as "History of Civilization" or "Global Issues" are encountered most frequently in the Core model of different higher education institutions. Historically, Columbia University was the first to develop a Core Curriculum in 1991. Some other examples of universities with a Core Curriculum are The University of Chicago, Massachusetts Institute of Technology, California Institute of Technology.

3. Based on an internal interview with Nadezhda Fyodorova for the Strategic Communications Division of the University of Tyumen.

13 % Electives

87 % Major

26 % Electives

4th YEAR

74 % Major

26 % Electives

3rd YEAR

71 % Major

3% CORE

conscious choice

20 % Electives

2nd YEAR

36 % Major

44 % CORE

1st YEAR

The educational space of the university includes four components:[4]

Core module (Core) forms the general cultural competencies, serves as the basis for the identity of the University of Tyumen students.

Major module (Major) is the main professional module that consists of a set of subjects in the field of study. A state degree is issued in accordance with the selected Major.

Minor module (Minor) is an additional professional module, additional qualification of the future graduate. The student can select this module from the second year. The confirmation on completion is a certificate.

Electives module (Electives) is an optional module that includes subjects from non-core fields that a student may select independently.

The Core module includes nine courses:

• Russia and the World – a course about traditions and the cultural context that a student always confronts when studying any topic, subject and doing a research project.

• Digital Culture – subject about state-of-the-art technologies and their place in the world.

The pairing of these two courses delivers a specific educational goal. Thanks to the subject "Russia and the World", students become immersed in the cultural context. They study and identify patterns, work with different sources, conduct anthropological studies (among other things, in a city). Then, using website building, web design, database creation or infographic skills obtained in the subject Digital Culture, a student transforms the assembled data into a specific product. These subjects end with the public defence of projects that students develop in teams.

• Philosophy: technologies of thinking

• Principles of Natural Sciences

The polarity of these two subjects is obvious: philosophy as a metadiscipline is contrasted to the interdisciplinary course on natural sciences, which includes elements of physics, geography, biology, and chemistry. They are studied in parallel, because the subject matter and structure are built around the same principle. Both disciplines are divided into three modules. In the current academic year these were the modules "Brain and Consciousness",

"Anthropocene" and the "New Industrial Revolution".

This enables students to study the same topics and the same subject in different languages: in the language of the humanities, and the language of science.

• Mathematics – develops the competency of systems thinking.

The heads of study programs determine the specific fields of study which require the level of mathematics to be higher, and the fields where it can be lower. For example, there is one set of requirements for the Institute of Mathematics and Computer Science, another set for the Institute of Chemistry and a third set for the Institute of Social Sciences and Humanities. At the same time, each level also has "degrees" of difficulty that a student may determine independently.

• Foreign language – the teaching concept is based on the idea that a student must be able to communicate in a foreign language. A student may not master grammar and the intricacies of pronunciation in full, but should not be afraid of communication.

• Civil defense is a compulsory subject for Russian universities; it is studied through an online course (MOOC). This enables students to acquire experience of studying in a new digital environment and expand their potential as part of PET.

• Physical Education – the theoretical part of physical education is also taught through MOOCs.

• Project Management – the subject is currently at the designing stage. It will be launched in 2020.

Electives module

The elective space meets two objectives that at first glance appear to be contradictory. On the one hand, elective courses aim to make a student's education as broad as possible, and to present the whole range of options available at the university, the full palette of current knowledge. On the other hand, they aim to provide students with an opportunity to build their own individual path and assemble the unique set of competencies, which will enable them to stand out as professionals.

Electives are included in each year's offerings. Both the professors of the University of Tyumen and external applicants may offer a course to teach. The decision to include subjects in the educational space is collegiate and is adopted by an expert commission, consisting of the representatives of each institute and external experts. The elective space is multidisciplinary, and a representative of each discipline or professional area is responsible for its area and expresses the interests of the students of its institute.

The carrying capacity of elective courses does not always satisfy the demand for existing electives. That is why an additional tool had to be used – student ranking. On the basis of the academic ranking, students who scored 4.75 points and above based on the results of the session are granted the priority in choosing. In this way the university guarantees

that the best students of the University of Tyumen select specifically the subjects they want to study. However, at the end of the day, every student has the right to choose.

Consequently, the subjective positional scheme of the educational process is changing in the new model. In this model the student not only selects elective courses repeatedly, thereby forming the competency of a responsible choice, but also participates in filling the educational space through surveys and rankings.

The guides in the educational space

With the introduction of PET, the student becomes the central figure of the educational process. The change in the educational space has resulted in a change in the support services. During the adaptation of the university to innovations, students have no universal channel for obtaining information. That is why the position of a "guide" was created.

A team of five salaried tutors in a group tutorial format presents a map of the educational space and assesses whether the student understands the logic underpinning the curriculum structure and the options available. At one-on-one meetings first-year students form the competency of informed choice through goal-setting and reflection tools proposed by the tutor. A feedback system makes it possible to monitor the level of stress and motivation of the students, and the quality of the educational resources.

'It will be hard, but worth it!'

This is the motto selected by the University of Tyumen for the transformation era. It is intended first and foremost for the students. Externally, however, the motto would appear to be more appropriate for the team of university transformers. A change in the educational process resulted in the reconfiguration of virtually all the units of the university – from the dean's office to maintenance departments. Something more serious is going on as well – organisational principles are changing. The system of coordinates is shifting from the academic group towards the student. The university is no longer a "social safe"; now it is a space for individual self-determination.

This is uncharted territory for the entire university community. The situation is complicated by the fact that the University of Tyumen is torn between its public image as a boldly transforming university and an internal state of turbulence. There is also a sense of general insecurity stoked by the "restructuring" and the concern that this might all end up being just one big social experiment. Close-knit communication within the management team, between the administration, faculty staff and students is becoming critically important for the transition to a new model. For the time being, as in any other organisation, it is insufficient.

There are also other temporary difficulties. Modeus (the digital platform for the PET ensuring proper digitalization of the new curricular model) is still being configured. The School

of Advanced Studies, a greenfield project at the University of Tyumen, described in the next case, is exerting pressure on the university due to the ambitious scope of its model.

The University of Tyumen is working on all these problems. The website was updated in summer 2019, and now discloses and visualises in detail the intended purpose, principles and mechanics of PET. Navigating the website, applicants and students can see the map of their future educational trajectory.

Naturally, the resolution of some problems will lead to the discovery of new ones. The transformation of the educational process here is an endless obstacle course for administrators, tutors and, in the end, students. The stakes are increasing for the University of Tyumen. After declaring the new format, the university is now being scrutinised by all the top higher education institutions in the country. The successes and drawbacks are out in the open. This may well make everything more interesting.

What PET means for me

Ekaterina Fadeyeva
first-year student, Institute of Social Sciences and Humanities

Did you know about the university's personalized educational tracks system before you enrolled?

When I enrolled, the Admissions Office explained the new system. At the time, I did not understand the extent to which PET would affect my student life. But it played a major role during my transfer from Chemistry to Journalism.

When did you realise that chemistry was not for you?

A month after starting my studies, I realised that I had made the wrong choice. I contemplated a transfer, but did not know exactly where to. I considered psychology and journalism. Over time my tutor and I rejected psychology. In the end I decided on journalism.

Tell me about your experience of working with a tutor.

Everything started with the tutorial. This is when I said that I wanted to transfer from Chemistry. Afterwards Valya (my tutor) invited me to a one-on-one consultation. At the consultation we discussed my situation, she asked me questions which led me in one direction, etc. [...] A tutor is not someone who tells you what you should do, they don't make choices for you. The tutor prompts you to form your own priorities and decide on a personal choice that only you can make.

How do you assess PET from an educational perspective? In your opinion, is this the right approach? Do you feel that you are a "part of an experiment"?

I started thinking about the topic of "what PET means for me" quite recently. Previously I took it for granted (I have no experience of another system). When it is time to select courses I feel like a part of an experiment: at a certain time you have to make a decision, which will influence the next six months of your life. That is a lot of responsibility. For instance, you want to get a specific professor or a specific subject, but did not sign up on time, so you make a new choice. I have learned how to choose consciously and flexibly. Now I always have two options, even three. And if I don't manage to sign up for an elective, I review my trajectory in general. I have created a table in Word where I document everything.

What do you like about the new principles? What do you clearly dislike, what do you perceive to be "flaws in the system"? What do you consider redundant or missing?

Let me start with the drawbacks. First of all, I don't like the time of the selection. I believe that the choice should happen on a day when all students are free, in other words, when there are no classes. Secondly, at present this is a "blind choice". Before taking a final decision, I would like at the very least to be able to see the professor, hear them talk about the subject. [...] And I like the fact that we can choose, and that we have space to make a choice – various electives. Everyone can find something that they will like. Take one example, on one occasion I came across an elective course related to law.

And I thought: "Who could actually find this interesting? Probably nobody has signed up for this course." And then I learned that there were no places left on this elective course. This came as a shock.

In your opinion, if one compares a student in a traditional program and a student on PET, what would be the difference?

I find it hard to answer this question, as I still have not met such students. However, I assume that they would have fewer acquaintances, as they would not have mixed as much as we have: journalists, chemists, psychologists, historians – everyone studies together. This makes it possible to communicate with people from different areas and this helps you form your own views, because everyone thinks differently. For instance, I attend the elective "Human Environment". The format of the lectures is atypical – during the classes we watch films on human environment, and then we discuss them together. Each student notices something different for themselves. [...] As a result, we all encounter different views and opinions. This makes it easier to unlock the topics of the course more than if professors spelled out these aspects in their lectures.

Tell me about teamwork as part of study projects.

A team can have three to six members. [...] This experience differs strongly from individual work. I worked with an individual who is my complete opposite. We perceived the project from different angles, on the one hand this helped, but on the other hand – we would frequently argue. As a result, at some point we were unable to continue the work. I also realised that it is better not to do joint projects with friends.

Source: University of Tyumen / Denis Zinoviev

What prevents you from using the system 100%?

PET gives you a choice. When selecting electives, some students base their choices only on ideas about their future professions, and not on their interests. As a result, they personally limit their choices. So, in my opinion, one shouldn't be afraid to take a course on the art of rhetoric if they want to be a chemist. Be versatile, communicative and a master of your craft. This is really valuable in our world.

What is the attitude of students to PET in general?

I have asked my fellow students, but they cannot answer. That is because a lot of them never think about PET. For them, it is just the way things are.

In your opinion, what should be done at the next stage?

Professors should deliver preliminary presentations of their courses. We also don't like the division into "straight-A students" and everybody else (during the selection of the courses). However, I don't know how you could structure this system in some other way. The very fact of the division is unpleasant.

Alexander Sannikov
tutor

The tutor: Guide and Discoverer

Why did you decide to become a tutor?

Firstly, this is something I have experience in. I have held the position of a psychologist at the School of Advanced Studies at the University of Tyumen (SAS) since the last academic year. This year, we had 200 candidates for 10 tutor positions.

Secondly, I find this work important. The general idea of Vygotsky's cultural-historical theory is that in order to form any qualification or function, they must be initially framed in the culture as a position. In other words, our own mindset, what we call our inner world, or competencies, or even values used to external at some point. I see the irreversible development of culture, or collective consciousness, in the very idea that there is a separate profession in the area of education with the function of creating the right conditions for reflection (this is how I see it). In other words, what is happening is very important to me and I am delighted to be taking part in this process.

Thirdly, I also have personal incentives. In my work, it is vital that I communicate with people, operate at a high level of abstraction (usually, this happens in communication) and build complex constructs. This facilitates tutoring as there is no operating professional standard. Accordingly, it can be designed from scratch. This is also work with choice, with how an individual makes a choice – a very intimate and private process. I have always found this interesting. Several years of my professional career have been linked to this area.

Do you think the profession of a tutor is being formed now?

This is happening; slowly, but it is happening. When we assembled the team, first and foremost we started with an analysis of Russian and global experience. It transpired that the image of tutoring varies in different spaces. So, we cannot talk about a single standard.

Which effects of PET can you already see?

One of the PET effects that we see today is that students assume responsibility for their choice. The dynamics is impressive. In the "pipeline" system, transfers among majors occur far less often. As our practice in PET shows, out of 170 people a tutor has approximately 10 who are planning a transfer or have already completed it. I believe that this is very important. The PET effect, which has already been manifested during the year, is that students start asking the question: "What are my actual choices, outside of social and parental pressure?" This happens because the students see different routes from their communication with other students and faculty members.

And the negative effects?

A number of students do not perceive the principles of the system as a whole, they don't understand where it is taking them. That is why they perceive PET as a marketing tool and focus only on emerging technical problems. From here many students fail to differentiate between PET and Modeus [digital platform for the support of PET]. They perceive this to be the same thing. However strange this may sound, students
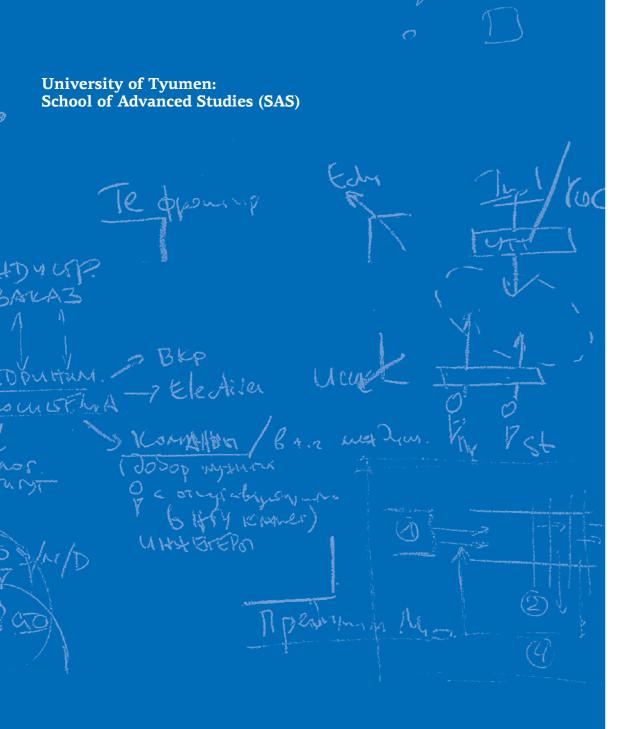
often don't know what is meant by major, minor or core as the components of the system, they are all called "Modeus".

We perceive tutoring as an integral component of the educational space, while in the case of students the term "tutor" is frequently equated to "psychologist".

Subsequently, we don't provide the students with a prism through which they might see PET as a system. And this leads to complications. Cite one example, a number of first-year students do not recognise the value of visiting professors, they don't understand the volume of resources allocated by the university for this purpose. This is the logic of some students – "This is just a visiting professor, I will never see them again, I don't have to pass any exams with them, so I don't have to attend."

And one last thing. During the first few months tutoring was intended to teach students how to communicate with strangers, feel comfortable in a space where they don't know anyone. And initially students admittedly would cling to their major groups, whereas now they make choices without checking whether their friends will attend a course or not. They choose on the basis of personal interests.

Source: University of Tyumen / Denis Zinoviev

University of Tyumen:
School of Advanced Studies (SAS)

NEW INTERDISCIPLINARITY, OR WHAT A PROFESSOR WITH A HARVARD PhD IS DOING IN SIBERIA

Vera Volyanskaya
Researcher and Analyst, SKOLKOVO Education Development Centre

The School of Advanced Studies (SAS) at the University of Tyumen is an anomaly in the Russian educational and research space. It is a magnet for researchers – PhD holders from the world's leading universities – and a provider of an English-language elite education. Created only two years ago, SAS is often mentioned today in the Russian higher education community as a case in point of a radical greenfield project.

It is not surprising that Russia lags behind in social sciences and the humanities. Soviet higher education drew its strength from teaching physics and mathematics, while core values and worldview were formed in secondary school. As a result, the inclusion of Russian researchers in the global agenda is limited by the "resource curse": most of them are perceived in the global academic community as specialists on Russia

and the post-Soviet space, of interest only in terms of access to unique data, knowledge of the language and cultural specifics. If Russian researchers are satisfied by this "competitive advantage", the development of theory and responding to global challenges will proceed without their participation.

Approximately three years ago the University of Tyumen started rethinking its research and teaching. The School of Advanced Studies (SAS) is a brilliant example of this. It was created from scratch as a research and educational greenfield project within the university. The goal is direct access to the global agenda, without the typical Russian focus on local issues.

Interdisciplinarity "for real": the SAS research model

A breakthrough had to be based on the research model, instead of a purely educational platform. "You cannot bring people to a remote place just to teach," claims Andrey Shcherbenok, Director of SAS. "It is easier to design interesting study programs than unconventional approaches to research. However, only the latter may be of serious interest to competitive international researchers." The core of the research concept of the School was the requirement for interdisciplinarity, or, as they say at SAS, interdisciplinarity 'for real'.

The idea of interdisciplinarity-based vision originated from "total dissatisfaction with the state of social sciences and the humanities in the world," recalls Andrey. In his view, research today has become so specialised that even two sociologists cannot understand each other. Apparently, specialisation and fragmentation are frequently the result of the general logic

SAS team

Anastasia Rusakova,
Associate Director of SAS

Ekaterina Selikhovkina,
Academic Positioning Advisor of SAS

Andrey Shcherbenok,
Director of SAS

"You cannot bring people to a remote place just to teach, It is easier to design interesting study programs than unconventional approaches to research. However, only the latter may be of serious interest to competitive international researchers"

**Andrey
Shcherbenok**
Director of SAS

of research advancement. The growing complexity of scientific knowledge implies increasingly specific methodologies, conceptual frameworks and systems of research training. The situation is exacerbated by the laws of the academic market: in order to obtain work and subsequently tenure[5], you, starting from your PhD, must publish in one specific topic in which you eventually become the top expert. In addition, university disciplinary departments constantly compete for resources and students and lobby their research and study programs, emphasising how they radically differ from everything offered by related areas. Andrey Shcherbenok names another reason for the disciplinary silos – the actual hiring policy: "Despite the frequent lip service to the disciplinary breadth of research and teaching in position descriptions, the committee selects people based on monodisciplinary criteria." The reason for this is that disciplinary departments are responsible for hiring.

Why then not let highly specialised researchers continue to work separately?

The problem is that the disciplinary framework limits the communication essential to resolve real world problems which cannot be reduced to a single discipline. As a result, despite the constantly stated assertions on the importance of the humanities for the 21st century, in its current form social sciences and the humanities cannot offer answers to questions of concern to society. "Multidisciplinary research at SAS is not a collection of monodisciplinary academic papers on a common topic under one book title. This is research that is relevant simultaneously for several disciplines," says Andrey.

This principle determined SAS' institutional structure: multidisciplinary research teams instead of traditional disciplinary departments. Professors work at SAS full time, so that a multidisciplinary project is not simply a hobby compared to core "disciplinary" research. Life sciences and information technologies have been added to the thematic core of social sciences and the humanities. Such a combination is promising in the context of research on real world problems related to humans in their social, cultural and biological dimensions.

Today five multidisciplinary research teams work at SAS; there are plans to increase their number to seven or eight, and the number of faculty members to forty-five by 2021. The topics of the projects are varied. For example, the team "Education in the Tragic Key: Learning in an age of Crisis and Anxiety" studies contemporary educational framework through the lenses of pedagogy, anxiety, and crisis.

Research teams assessment was another issue to solve. Andrey calls the projects "start-ups" and adds: "We obviously hope

5.   Tenure – life contract issued to a professor implying full protection of employment. It guarantees the highest academic status, a higher degree of academic freedom and a higher level of compensation.

that our success rate will not be as low as with actual start-ups. However, we needed a tool that would make it possible to close a [failing] project effectively and disband the team". The traditional scientometric approach to assessment doesn't work: researchers start working from scratch, and it is highly unlikely that they will be able to publish anything within a year. That is why the projects undergo an annual review: an external expert council is created for each project. It has to assess the progress of a project in general and each researcher individually.

SAS had to develop and install new norms from scratch. Professors from different academic traditions, the difficulty of planning ahead, the requirement to cross the boundaries of one's competencies – all these aspects of a greenfield project make the situation precarious from the perspective of governance. A part of the solution was a detailed documentation of the rules of the game. In addition, the issue of the compliance of SAS' interests and individual professors' career goals is important: as in the past, extensive research done within one discipline over many years still performs better in the academic market. A multidisciplinary research project at a new experimental School in Tyumen may be perceived as a stage aimed at enriching the individual's CV and end on that note. On the other hand, a truly successful project will increase the academic status of the researchers involved in the project significantly. The decision to participate in a multidisciplinary project is a high risk, high gain strategy.

Academic hiring at SAS: the Project Design Sessions

The process of faculty search and hiring is a key component of the SAS model. A greenfield implies hiring several faculty at once, while the focus on multidisciplinary research – aiming to form "flat" teams that do not gravitate towards one pole, disciplinarily and managerially.

Project Design Sessions (PDS) on the design of multidisciplinary research projects have become a unique experiment in the academic world. The framework for the creation of the format was the international practice of cluster hiring (simultaneous hiring of a group – a cluster – of professors) and the Moscow School of Management SKOLKOVO strategy sessions format.

Cluster hiring might be a tool for hiring a large number of professors at once, but it is out of sync with the understanding of multidisciplinary at SAS. Elsewhere, professors hired via cluster hiring and working on multidisciplinary projects are still assigned to separate academic departments, whose heads make the hiring decisions. Even if the one who hires

CLUSTER HIRING

The term "cluster hiring" in university practice may refer to both formal and informal hiring procedures. During cluster hiring, the group (cluster) of professors may be hired:

- to one academic division

- to several academic divisions (including divisions that are disciplinary close)

- to work on interdisciplinary projects at the interface of university departments/schools/campuses[6]

Cluster hiring was first documented in 1998 at the University of Wisconsin-Madison, USA specifically for interdisciplinary research "outside the boundaries of academic departments"; 150 professors had been hired to work at 50 research "clusters" by 2017.[7]

6.   See cluster hiring at the University of Washington
7.   See Cluster Hiring Initiative at the University of Wisconsin-Madison

is the leader of a multidisciplinary project, there is a risk of being caught in disciplinary silos. "This is very convenient for the administration – you select project leaders and allow them to put their teams together. You only have to deal with the leaders, assign them KPIs and monitor their performance. However, if a biologist is in charge, then it is highly likely that they will only hire a philosopher to comment on the ethical implications of their own project in biology. This is not the multidisciplinarity we are after," explains Andrey.

At SAS "flat" multidisciplinary research teams are formed right within Project Design Sessions. Job candidates with PhDs from the world's best universities gather in Tyumen for five days after the preliminary selection. Each day is broken into two parts: the development of collective research projects and a plenary meeting with the defence of projects before the expert council. The council may propose adjustments or changes to the topic or even the dissolution of the team: in the next iteration the participants may join a different team or create a new one, after proposing the new topic of the project. In the end, several multidisciplinary teams get hired.

PDS create the unique space to come up with projects, which might never appear within the boundaries of the typical academic world. Researchers from different sectors may never end up together in one room, let alone work on a joint project. In the 2019 session, when the expert council asked one of the teams "why haven't others done this before?" (addressing the novelty of their research project), one of the participants answered spontaneously: "because they've never hung out like this together as we now do". Now a number of professors at SAS say that the research topics and teams that appeared during PDS were the actual reason why they moved to Tyumen. SAS Professor Tomasz Blusiewicz called PDS "the key intellectual event" in his career. In addition, a number of researchers were drawn to the opportunity to participate in the "organizational construction" of a new multidisciplinary institution from scratch.

There are challenges. For people from the world of academia, such a format is becoming its own form of a "social experiment". Used to working slowly, steadily and, frequently, on their own, researchers must find common ground within four hours of group work. An additional stress factor is that the expert council comments

on projects in a way that differs significantly from the North America's tradition of soft communication. In real life, only a few people are ready to open up to new ideas, cooperate and defend the research position of their team. Only those who have proved their readiness to do so remain.

The PDS format is evolving. In 2019, for the third PDS since the creation of SAS, teaching demos were added to assess the teaching skills of the candidates.

There are other problem areas. Firstly, a clear "element of randomness": when you have twenty-five people and only four days, a good researcher may simply fail to find a team. Andrey says: "Someone may get unlucky. We address this through the preliminary selection – we try to increase the number of potential links among researchers." In addition, a project may go to pieces because a key team member does not accept a job offer. You also have to factor in teaching: as SAS has to provide majors in a number of fields, it has to focus on candidates with specific areas of expertise more.

• University of Michigan
• University of California, Davis
• University of Kansas
• University of California, Berkeley
• Penn State University
• Duke University

• Emory University
• University of Montreal
• McGill University
• Harvard University
• Boston University
• New York University
• Johns Hopkins University

• King's College London
• Oxford University
• University of Helsinki
• Institute of Sociology, RAS
• Aix-Marseille University
• University of Milan

PDS results:

2017:
28 candidates from
21 universities of 9
countries

3 winning projects,
17 full-time professors

2018:
18 candidates from
17 universities of 14
countries

2 winning projects,
7 full-time professors,
including two with tenure
in the USA and New
Zealand

2019:
21 candidates from
20 universities of 12
countries

2 winning projects, 5 full-
time professors

75%

more than 75% of SAS
full time professors got
their PhD from top 100
universities according
to THE and QS world
university rankings

Education at SAS: a different type of bachelor's degree
Elite education, internationality and liberal arts

In what way does education at SAS differ from other Russian universities? Well, in all ways. SAS tells its applicants: "We have different (internationally mobile) professors, a different (free) educational trajectory, a different (relevant) curriculum content, a different (interactive) study format, and a different (open) educational space."

Undergraduate education at SAS aims to prepare future leaders – versatile, critically-minded and globally competitive. The prevailing model of the "educational pipeline" in Russian higher education institutions built to prepare employees for a specific workplace has this as rather a side effect if at all.

The "educational pipeline" rarely makes it possible to deviate from the standard – in the curriculum, communication with faculty members, the exam format. This is particularly crucial in social sciences and the humanities: students must learn

5 multidisciplinary research projects:

• CITIZENSHIP REFRAMED:
  Reimagining Political Belonging through the Environment, Psychology, and Visuality

• EDUCATION IN THE TRAGIC KEY:
  Learning in an Age of Crisis and Anxiety

• FREE WILL, CONSCIOUSNESS, DETERMINISM:
  An Interdisciplinary Investigation

• LABORATORIES OF DEMOCRACY

• UNNATURALLY HUMAN:
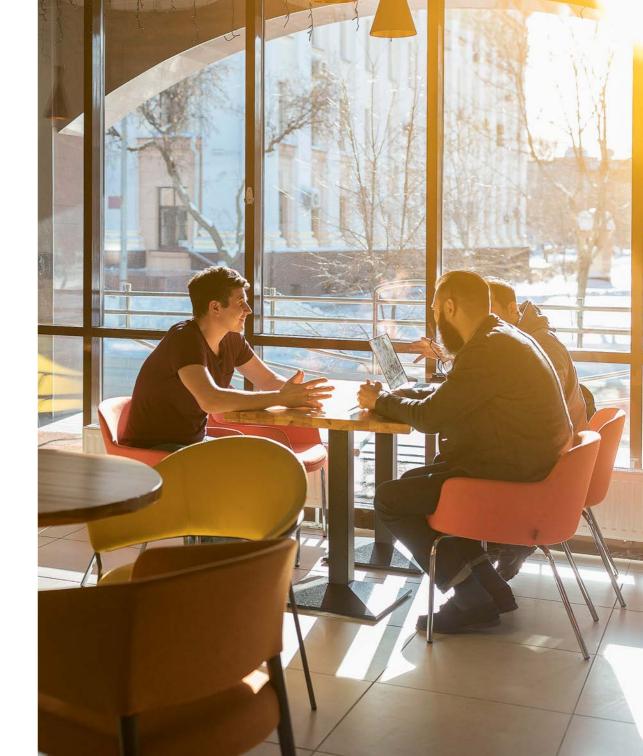 Enhancement and Manipulation of Human Capacity to Perceive and Perform

how to view a problem from different perspectives, and uphold the polyphony of historical, social and cultural contexts. This is critical for future leaders and managers, and the foundation may already be laid at the level of university education.

The SAS bachelor's program is built on the liberal arts format and principles. To a large extent, the student personally configures their own personalized educational trajectory. The maximum breadth of views and perspectives is ensured, inter alia, by the international environment and culture at SAS. A globally competitive graduate needs to understand different national and international contexts.

However, mechanistic movement along the educational trajectory, notwithstanding disciplinary breadth and free choice, is not sufficient. The ability to think and critically assess reality can only evolve in an equal dialogue (individual and collective) between professors and students. In addition, the actual environment is important, as are the general underlying values shared by the faculty, students and all the staff in general. Creating and maintaining a high level of motivation and openness and, simultaneously, competition and juxtaposition of different perspectives is impossible in the case of mass selection. That is why elite education, with its meritocratic selection, special atmosphere and strict academic requirements has become an important characteristic of the SAS academic space.

Meritocracy, liberal arts and internationality have become the key principles of the SAS educational model. A major is selected only at the end of the second year. The first two years

consist of the core courses and electives, which are the platform for the development of students' outlook, and, concurrently, – "rehabilitation" from the Unified State Exam. After an intense period of filling out standardised forms with ticks, students are taught how to think, break boundaries and deviate from the norm. This is specifically the goal of the core course "Writing, Thinking, Analysis, Interpretation", during which students work with texts from different genres, images and video materials, and are taught how to interpret them and create their own, thereby learning about the fundamentals of rhetoric, argumentation and techniques of writing. Students attend the course "Great Books: Philosophy and Social Thought" in parallel with "Quantitative Methods" and programming, and the "History of Art" – with "Global Issues". The classes are conducted in small groups in an open discussion format (naturally, each professor has their own specific style). At the interface of areas, themes and disciplines, combined with open discussion, students learn how to think critically, ask questions and make a conscious choice – in the broad sense of this word.

Diverse electives, ranging from the theory of market organization to the methodological principles of film analysis, are the principal component of the curriculum. The contents vary from more general to highly specialised and even niche, depending on professors' research interests (so that a professor may be truly invested in their course). In addition, the world is changing so rapidly that it is impossible to predict accurately what the student should select: there is no standardised set of skills or topics. Therefore, it is not important what you choose from, but rather the actual selection and ability to make use of it.

CORE
1st and 2nd years

Writing, Thinking, Analysis, Interpretation
The City as Text: Saint-Petersburg
Great Books: Philosophy and Social Thought
Problems of the Modern Sciences
Art: The European Tradition in Art and Architecture
Great Books: Literature
Quantitative Methods
Foundations of Management
Information Technology
Effective Communications
Global Issues

MAJORS
3rd and 4th years

Choice of seven majors

Sociology and Anthropology
Economics
Film and Media Studies
Cultural Studies
Information Technology and Digital Society
Life Sciences
Historical Studies

1st to 4th years
ELECTIVES

**Individual choices
for each quarter**

A pool of more than 100 electives that draw upon
faculty research expertise

**THE BASIC
MODEL OF THE
CURRICULUM**

**ELECTIVES'
EXAMPLES**

Topics in Genetics: The Strange World of the Nucleus and its Social Implications
Juliette Colinas

Nietzsche: Beyond Good and Evil and the Death of God
Zachary Reyna

Implications of a Non-polar World
David Dusseault

History of Energy
Tomasz Blusiewicz

Introduction to Phylogenetic Inference Based on Molecular Data
Almir Pepato, Pavel Klimov

Introduction to Artificial Intelligence
Munesh Singh Chauhan

Image Scavengers: Collage, Montage, and Appropriation in 20th Century Art
Erika Wolf

Medical Humanities
Corinne Doria

The Rise and Fall of Complex Societies
Jay Silverstein

Time Travel and Philosophy of Time
Giacomo Andreoletti

The Theory of Market Organization
Mikhail Drugov

Critical Animal Studies
Margret Grebowicz

The Problem of Free Will: When Philosophy Meets Modern Science
Louis Vervoort

Film Analysis
Oksana Bulgakowa

"Where will my child go to work?"

Parents from the Soviet education system could easily ask this question. However, for SAS, graduate, not undergraduate, education is the place for professionalisation. On the other hand, the labour market today is so flexible that an employee who is able to think critically and has core knowledge in their major is valuable by themselves. The rest can be acquired in practice.

However, such behavioural models do not prevail in our system, which is what the educational process is currently facing at SAS. Starting from school, we are used to adhering to specific principles in education. We are not used to asking questions, we look for answers in the text, and not in a discussion, and frequently await a teacher's approval instinctively, because we are afraid of saying something "wrong". All this was an eye-opener for the international faculty of SAS: a recent article "Russian students through the eyes of foreign professors" featured the main conclusions of SAS professors they had drawn from working with Russian students. A Russian student believes that asking a question is a sign of weakness, and that changing one's stance means admitting defeat. Feedback and comments from a faculty member are perceived as an attempted reprimand, while students turn up for consulting hours primed to defend themselves.

The more students change their behaviour at SAS – through communication with professors, spending time in a different environment and through the actual educational process – the more they become an isolated community both within the university and their city and region. The issue is not

simply about the different principles of the education process, but rather a different mindset and perception of the world.

Master's program at SAS

The core concept of the master's program at SAS differs from the one of bachelor's programs. "Digital Cultures and Media Production" (the only, to date, master's program) is aimed at professional training. However, it is also built on a broad interdisciplinary approach. The graduate not only acquires basic competencies in the media, but also gains an understanding of the sphere, the vectors of its development together with the ability to develop with it. In 2020 SAS plans to open a second master's program, Experimental Higher Education.

"Night crawlers in the twilight hours"

On the student environment in SAS

Anastasia Rusakova
Associate Director of SAS

Ekaterina Selikhovkina
Academic Positioning Advisor of SAS

The student environment occupies a special place in SAS and is the "calling card" of the School – on an equal footing with special research and educational models. **Anastasia Rusakova, Associate Director of SAS, and Ekaterina Selikhovkina, Academic Positioning Advisor of SAS,** explained how the student environment was designed in SAS, talked about communication between students and foreign professors and how to avoid the gap between the academic and physical space.

About the SAS student and their experience

How did you design the student environment at SAS?

Anastasia: This was not designed in any way. At the design stage, you had the feeling that there were mythical students – applicants, who were hankering for this and suffering from its absence [a student environment]. We were convinced that we would find our students. We felt that we would propose a cool model, and that everything would follow of its own accord. And

the first thing that we confronted is that the initial decision is made by the parents. There was an instance when the father supported [the enrolment of the applicant at SAS], while the mother and grandmother were opposed. This was the time of the first admission campaign when we understood that we had to explain what sort of applicants we were looking for.

Ekaterina: These are complementary things for me: the way we structured the educational model should be reflected in extra-curricular life. One follows from the other.

We did everything so that many intellectual and emotional events occurred both in the classroom and in the space of the School. The idea of the liberal arts model includes, among other things, student experience, and trials. In other words, this is not simply about reading texts and studying theory, this is about diverse situations in life – for example, about communication with a professor from another country. And this is not simply one foreign professor, these are different people, and the experience of students interacting with them also differs significantly.

About interaction with the professors

How are the relations between students and professors evolving?

Ekaterina: Always in their own fashion. The issue of distance and boundaries plays a special role here. For instance, here we don't consider it rude to address a professor by their first name. Subsequently everything depends on the specific professor, on how they build individual

communication. And this is also our objective – to increase this polyphony, and the diversity of the experience.

You have Erika, for example, who should be addressed as "Professor Wolf", but who is also very committed: she knows the student community, chats with them; she would take students to Ekaterinburg and Saint Petersburg. This was a course on the history of art, and the students delivered presentations on paintings in English directly at the Hermitage. She is a professor in the full meaning of this word.

You have young professors, who were until recently students themselves. They believe in democracy, everything is very horizontal. Sometimes, even too much so.

About the campus

What was the concept of the campus?

Anastasia: At SAS nothing is done simply for the sake of it, not a single component. When I do tours of the School, I take people to the second floor and ask to articulate at least three core principles of our educational process: transparency, mobility, flexibility, small groups, interactivity. I usually talk about transparency, visibility and interactivity. I show them: here you have group work, here you can work on your own.

Ekaterina: For me, from the very start it was a priority to establish what is not always a norm for Russian students – a conscious attitude towards the work space. This is a professional attitude as in the case of professional communication. Every student, faculty member and a staff member of the School

is in charge of the space: they may change something, transform something, but at the same time they treat the infrastructure and the environment responsibly and support the atmosphere.

This culture has to be created, as generally we have two radical poles. Either people actually disregard the space – they sit at the end and may not move a chair to be close to another student, they remain aloof; or they display a familiar, thuggish, consumer attitude – I drop a paper, make a graffiti with a marker, etc. And both are inadmissible. Space is also a tool for work and one of the dimensions of professionalism.

The second story, which was also very hard to implement owing to its overambitious nature – concerns the first floor of our building. It is open to the city. You can enter the café from morning to night, you have a canteen, and a bookshop. Such a space relies on spontaneous communication, which represents an important part of the life experience of the student.

In other words, either you have the whole package, or you have nothing, and this is the key thing that universities don't understand. It is not enough to simply comply with the rules in class if nothing else changes. Nothing is going to change then. In class the professor lures you into fascinating worlds, beyond the boundaries of the space, and you imagine your life in a way that you could not have even conceived, because as a rule you are confined to the social limitations of your city, family, etc. And you leave the classroom, cross the threshold, and come face to face with dirty walls, rude people, and cold water. This is impossible, this is doublethink. This would be the height of irresponsibility at the very least. You cannot introduce radical changes

to the curriculum and then fail to consider everything else, as this creates a potentially dangerous situation for the student.

And finally, who are the so-called "night crawlers"?

Ekaterina: Our School has several rules regarding the space. The first one is 24/7 access. You cannot enter at night, but you can opt not to leave, you can sit there until 2 AM, 3 AM, 4 AM... Second rule – you can only eat food on the first floor, you can bring drinks in, but in a closed container. Because otherwise you would end up with a pigsty – people will dig burrows, drop crumbs, make little holes. This is not aesthetic and goes against what we are doing. The third rule – you can't sleep in the School.

Anastasia: However, one would like to take a nap sometimes. That is why "night crawlers" appear in the "twilight hours". The trick is to crawl to the sofa, rolled in a rug, as surreptitiously as possible, and not be caught out by guard. Students on our master's program have come up with the actual "term" within an academic project on the medialisation of the school space.

Tomsk State University: Higher IT School (HITs)

PROFESSIONAL EDUCATION FOR THE NEW GENERATION, OR "SOLVE THE BUSINESS'S PROBLEMS, NOT YOUR OWN"

The vectors of IT developments are changing rapidly these days, while the demand for IT professionals is growing. For universities, the standard reaction to changes in industry is to include a "trendy" discipline in the curriculum or simply create a study program with a new name. To fully reimagine the interaction of higher education and business and restructure the actual substance of the educational process is a difficult challenge for antiquated university systems even if they dare to set such a goal. The Higher IT School (HITs) at Tomsk State University is a project demonstrating that this is possible.

Vera Volyanskaya
Researcher and Analyst of SKOLKOVO Education Development Centre

While companies invest in the retraining of graduates, higher education institutions find themselves on the periphery, completely out of kilter with trends on the markets for which they are allegedly preparing the workforce. The project for the transformation of IT education at Tomsk State University started back in 2014 with the acknowledgment of this divorce from reality. Graduates are not

prepared to work at companies not only in terms of missing business skills (which is understandable), but also from the perspective of professional competencies.

Tomsk IT School was formed fairly recently – towards the end of the 1980s. "In fact, the first graduation from the Faculty of Computer Science at Tomsk State University was in 1993. And this is not long ago. That is why the initial starting blocks were not bad, and this enabled us to stay afloat for a little longer," says Oleg Zmeyev, Academic Director at HITs and the Vice-Rector for Digital Transformation (Chief Digital Transformation Officer, CDTO), Tomsk State University.

Soviet IT training accentuated applied mathematics in order to optimise computed machine time, which is no longer relevant today. Oleg notes that since Soviet times the "IT market has changed at least three times[8]; writing optimal beautiful algorithms is becoming a niche sort of a task." Nowadays, owing to growing segmentation and market specialisation and the increasing complexity of systems, professionals with a clear understanding of their role in the new division of labour are in demand. Oleg says: "The development of a modern software system is a complex integrated project involving different types of developers, designers, analysts, architects and quality specialists." Furthermore, in addition to the direct application of professional expertise, a software engineer must know how to resolve business problems, issues

of speed and flexibility, and know how to rapidly "roll out" a product in line with constantly changing market realities.

Tomsk State University's participation in the Project 5-100 added a global dimension to the process of designing the new model of IT education: the new program must help to enhance international competitiveness of the university. Oleg says: "It is rapidly becoming clear that you cannot build a world-class university if you don't have a strong School of Computer Science." This assertion is easy to verify by simply looking at the summit of the world university rankings: most of these higher education institutions are simultaneously topping the subject rankings for computer science.

World-class professional education

In 2014, a team of transformers considered the objective of reconfiguring the IT bachelor's program of Tomsk State University using three basic hypotheses:

1. **Elite program.** Here relevance and strong brand are stipulated. Applicants are highly interested, the intake exceeds the number of state-funded places, and you can impose the highest possible requirements on students. As a rule, however, such a program is expensive and requires a regular injection of funds.

2. **Broad bachelor's program.** A big inflow of students study together in the first and second year, splitting up, for example, to specialise from the third year, thereby creating a highly competitive environment for students. This format recalls the Soviet system with a choice of departments.

---

8. "The first change was the transition to personal computers and local area networks (and the replacement of monolithic architectures by client servers). The second change was the appearance of the Internet and web applications (the transition to three-tier architectures). The third change was mobile Internet and smartphones (service architecture). Each change was based on its own typical applications architecture, its mathematics, its requirements on what one should learn", *Oleg Zmeyev, Academic Director at HITs*

Tatyana S. Ketova,
Executive Director at HITs

Danila A. Sokolov,
technical assistance, web development

Oleg A. Zmeyev,
Academic Director at HITs

Denis O. Zmeyev,
analyst of educational practices

Tomsk State University: Higher IT School (HITs)

However, implementation of the program is contingent on large-scale participation – a critical flow of students and a corresponding selection of departments.

3. **Professional education.** The central focus is to prepare students for a specific type of professional activity, implying close cooperation with business and reliance on professional training standards created with the participation of industry.

At the same time, it would appear that successful cooperation with business is possible based on any of these models. The only difference is how you do this. Oleg says: "You can spend all your life with cap in hand, or you can tell business: let me assume some of the expenses that you incur... Anything else will be based on sponsorship and not partnership." In addition, if we accept that higher education institutions have lost sight of the current IT agenda, then where can you find it, if not in business? "This represents actual ecosystems-based, or symbiotic ties," notes Oleg.

However, integration into the division of labour of a business company does

"You can spend all your life with cap in hand, or you can tell business: let me assume some of the expenses that you incur... Anything else will be based on sponsorship and not partnership"

Oleg Zmeyev
Academic Director at HITs

95

Computer Science Curricula 2013 / Association for Computing Machinery (ACM), IEEE Computer Society

The standard, created with the participation of an extensive expert community from global leaders in IT education (Stanford University, University of Oxford, Carnegie Mellon University, etc.) and the world's top IT companies, is one of the leading versions of content for the IT bachelor's program. The standard is sufficiently detailed and at the same time flexible: this provides you with the feeling of having firm ground under your feet and an opportunity to find your bearings, while at the same time allowing you to keep your options open.

not mean that you assume the service position of preparing staff for it. For it is assumed that you have a global agenda – a problematic, educational agenda – and are training professionals specifically from this height, who are competitive within the region, country and the world, thereby opening up new opportunities for business. If you only think on a national scale, you won't unlock new opportunities. Accordingly, the international professional standard in IT education served as the contents-based "anchor" for the new program – and this is a "contract between business and you," says Oleg. In this case, it is logical that companies aspiring for the international agenda should become your partners.

From the perspective of the actual educational process, the student is placed in the centre. You prepare your future partner and they should become a junior colleague for you during their studies. However, in a classical well-established training program or in a program that has already been launched, it is not easy to implement an actual shift in focus to the student. That is why the new model was launched for the new intake of bachelor's degree students in 2017.

The most unconventional program in the most classical university

Practical training and actual ties with industry represent the centrepiece of the program. During the first two years of their studies, students attend courses assembled with a focus on the international professional standard, as well as the general courses of Tomsk State University. The focus on future practical challenges is already visible in the actual class format: many of them are conducted as a flipped classroom. Every week the students themselves master a set of theoretical material randomly distributed to groups before the class and receiving a set of assignments for the group. Only the group result is assessed.

The first-year students of HITs master the standard set of programming courses "spread" over four years in a standard bachelor's program by the middle of the second semester and carry out a project at the end of the year. The project involves the development of a mobile application, or, to be more specific, a graphic image editor: from scratch, in a team, with shared responsibility.

Tracks of the third year of BSc Software Engineering at HITs:

Innovation / entrepreneurship track enables students to focus on the practical implementation of their own IT start-up. The students may come up with an idea for the start-up back in their second year of studies as part of the course "Innovation Design": the course is taught to all the students and ends with defence by the students of their own IT projects.

Business track implies work in a company.

Research track means that students may continue studying computer science in laboratories – from big data to computer linguistics and bioinformatics.

Afterwards, the project must be defended before business representatives. During the process students immediately see where the algorithms they have been taught in theory are applied, learn how to use different sources, and, in general, learn not to be afraid. At the end of the second year of studies, the students pass the exam for junior developer (junior), thereby proving that they are ready to work in a real business. This exam effectively performs the role of a job interview.

In September 2019 bachelor's students of the first intake started their third year, which will, like the fourth, be extremely "practical". The students will spend 20 hours a week at a company, only returning to the university to "hone their skills". The diversity of professional trajectories is ensured by the opportunity to select a specific track.

In addition, the actual environment where students end up prepares them for future professional activity. Students design individual trajectories in the automated testing environment, where, on the one hand, the progress of the students is displayed and there is a student ranking (which presupposes competitiveness), and, on the other hand, faculty members have an opportunity to see the specific difficulties faced by students and prompt them on an individual basis.

Truly effective feedback mechanisms are a mandatory component of work with a student if the latter is a partner for you, and not just a "dummy" used to record information. Tutoring and other formats are also used in the program: specifically, the famous "confessional essay", in which students provide feedback on their first month on the program. And you must

take them into account. Oleg says: "Otherwise they won't believe you. The student must understand what you are doing with them, and this should not cause any issues for them."

And you should also remember that you are preparing not simply a professional, and even not simply a professional with a specific mindset. In the bachelor's program the student forms their own worldview and finishes building the core values. In this sense, the entire "Software Engineering" program is built on the principle of liberal arts, an idiosyncratic IT liberal arts model program. The non-core subjects for IT specialists are structured in such a way that the student understands why they need them – the subjects focus on problems and issues and the development of analytical thinking as such. The history course including the reading of "Domostroy" [Domestic Order – set of household rules and advice dating back to the 16th century], rhetoric, intercultural communication – all this does not become boring material for an IT specialist, but instead forms their worldview.

Plan to take over the world

Success was not long in coming: this can be judged by the rising performance indicators of the project after just one year.

In addition, the first feedback was received from business. Students from the first intake completed their second year of studies this year, with 90% receiving job offers from companies. In the opinion of business representatives, they are very well prepared for second-year students – far better than "standard" bachelor's degree graduates.

A new institutional entity has arisen around the program – the Higher IT School (HITs), with its own brand and identity. The School has started offering a "minor" for students from non-IT areas, while the formats and methodologies of HITs are already being applied outside the School. It is interesting that the most striking practice here is the history course developed for HITs students: the rote learning of fact-based information was rejected. Instead it focuses on the application of analytical methods, the identification of patterns and testing hypotheses. The authors of the course note: "By teaching history in a different way not intended for the faculty of history, we realised how we could rejig our curricula at the faculty." Discussions are under way on teaching programming for physics students based on the format of HITs. However, so far university divisions have not made it to the next management step – the restructuring of the entire educational process based on the new principles.

And then, in line with the plan, it's time to take over the world. However, starting first with the region: "Within five years a student in any part of the Siberian Federal District should think first and foremost about Tomsk

The 2018 intake results compared to the first intake in 2017:

- The pass score (Unified State Exam) rose by 49 points

- The average score in the Unified State Exam of enrolled students equalled 94.8

- The competition for places equalled 25 (more than doubling)

- In total four low-performing students, compared to 50 in the standard program

- The number of participants in Olympiads increased (12 people in 2018, compared to one in 2017)

- Only one student was expelled. He admitted: "I find it hard, as I am not well prepared – I will prepare better, take the Unified State Exam and enrol again"

- Won Russia's championship with 1C, wins in Digital Skills and World Skills

in connection to the quality of IT education," says Oleg. In addition to a strong footing in the IT business landscape of Tomsk, the School is an attractive employer for young IT professionals from business, guaranteeing salaries at a level comparable with the market, through corporate grants from business partners. In this way, the School will set itself the goal of preparing a new generation of IT professors in the country.

The lack of a critical mass of professors ready to introduce and apply new educational practices, and the inability to prepare them rapidly is one of the problematic areas for the School's development. To apply new educational methodologies, they will have to progress through the trial and error method. In addition, research groups in computer science will have to be recreated virtually from scratch. "Everything that we have represents the vestiges of Soviet heritage. These are the relics of history, niches," says Oleg.

"In general, the development program of the School depends on the developments at the university, at the very least in terms of infrastructure," says Oleg. "You have to wait for coordinated decisions, for instance, on student dormitories." At the same time, the School can work more flexibly thanks to the established partnership with business and income from educational activity – the principle of self-sufficiency was one of the underlying principles when the model was designed. This makes it possible to be independent when determining development priorities and obtain support from the top management of the university for long-term strategic projects (specifically, state-of-the-art equipment for laboratories, the development of specialist software).

Today, the development trajectory of HITs is flexible – just like the entire IT industry. "We don't know how to build the School," says Oleg. "Each season begins with the building of the hypothesis tree." Next steps are determined iteratively; at each stage there is a plan and determination of the "interval", at which point its implementation will subsequently be assessed. This is particularly important in the context of "maintaining" the level and model of professional education that is relevant to a rapidly changing industry. Otherwise, if you don't constantly "synchronise the watches", you can quickly be left out in the cold.

International students at HITs

A support system for internationationalization in Russian higher education institutions operates more on an administrative-technical layer than a strategic one. In particular, targeted practices to attract and work with international students – including well-considered strategic and tactical steps – are only starting to evolve. For the time being, the process is peripheral, and the success of specific cases mostly depends on the professionalism and persistence of stand-alone individuals.

At HITs, attracting international students is factored in the program model. The BSc "Software Engineering" program is implemented in two languages: Russian and English. There are 25 international students in total, primarily from East Asia, Central Asia and Africa – accounting for approximately 20% of the total number of students. **Eva Burbo, Foreign Student Recruitment Manager, Higher IT School (HITs),** spoke with us about the business model of the program, the specifics of the admissions campaign and the success rate of international students.

Eva Burbo
Foreign Student Recruitment Manager at HITs

What do international students mean for HITs?

For us international students mean that our program is interesting and in demand on the international education market. Also, from the outset we built our model of the bachelor's program as a self-financing model. [...] We had two approaches, two launches of the program: in the first year, we recruited only six students, and this was insufficient from a financial perspective. By the second year we had learnt from this experience and systematically recruited the first group – 12 people.

And what went wrong in the first year?

It is highly likely that this was due to marketing. The program itself was still half-baked, and it was late in the day when we notified prospective students – we didn't do enough to attract anyone to the program other than our own international students from the pre-bachelor group.

Is there anything important that differentiates the intake of international students at HITs compared to the entire university?

In terms of intake specifically, I believe that it is much better if there is one particular individual who controls the process. At this moment, the mechanisms applied to select students have not been developed (for example, a specific way we communicate with applicants – via e-mail, etc.). Everything depends on enthusiasm. Roughly speaking, at HITs we are determined individuals, who really want to make a breakthrough. [...] Therefore, if anyone writes

to me, I try to answer within several hours: via e-mail, WhatsApp, everywhere; on Saturday, Sunday. I try to provide a comprehensive service. Last year, for the admissions campaign, I processed the applications of 400 people in total.

What does a foreign student find most complex and incomprehensible when seeking to enrol with a Russian university?

We are talking about a combination of factors here. First of all, the university's own employees find it difficult. Russian students are admitted based on the Unified State Exam, and the mechanics of this is understandable for everyone. In the case of international students these are exams that we conduct independently, and the admissions campaign for international students should start far earlier than for Russians. For all intents and purposes, we admit virtually round the clock, and this means that the university departments, which prepare and check the exams, must be very well organised and work promptly. The admissions commission should work for both international students and Russian students, and this means that we have to "apply pressure" on the commission: make sure that they have prepared and checked everything. Consequently, you have two sides in this situation: as employees, we find it hard to adapt the process, while international students don't understand why everything takes so long. So, the biggest problem is to retain the candidate.

And what about their English? Is it more likely that they will attend studies in Russian or in English?

This is probably the most interesting experience for me today. As a rule, students are a little afraid of enrolling in a study program in English in Russia. Russia is not an English-speaking country. Hardly anyone intentionally takes an English-language program. I receive many questions like: "Do you really have a program in English?" And you have to answer: "Yes, yes, we do." There have been occasions when they ask: "You have a program in English specifically, and there is no need to take a preparatory course in the Russian language, right?" In fact, a number of them initially study Russian for a year in order to take the Russian-language program. Probably 50 percent of the students initially attended pre-bachelor somewhere in Russia (and maybe some of them attended such a course here at Tomsk State University). At the end of the day one year for learning a new language is not always enough to be able to study a degree using that language. For this reason, we see students choosing English-taught programs. They still continue having some Russian classes for basic communication. There have been a couple of exceptions. After studying for a month in Russian, the students transferred to the English-language program.

In general, do international students communicate with other students and professors comfortably?

In our case, there were no complaints about language – we have a fairly young team of lecturers: young postgraduates, several professors, and they all speak English. These are IT specifics, among other things – they all need language, in particular,

the professional language. That is why international students find it quite easy to communicate with the professors. As for students – we do all we can to promote communication among students. We have our own Intercultural Communication course in the first year of studies: during this course we specifically prevent students from breaking up into Russian-speaking and English-speaking groups. And professors use special techniques, games, different methodologies so that students get to know each other, talk about themselves, etc.

In general, Russians and foreigners are not mixed together during studies?

No, except for the third year. Currently the third year is terra incognita for us: this year is the first time that we will have third-year students, and we will conduct this experiment. In the third year, we have established internships, and there will already be a mix: students will do them in mixed groups. Both foreigners and Russians have the right to choose where they want to go for internships from the pool of our partners. And a student from Tunisia and Russia will have identical opportunities here.

And it is also worth recalling here that they all study together at one campus, under one roof, consequently, they also interact.

Oleg Zmeyev said that his hypothesis that international students at HITs, in terms of speed of learning and success, will advance on an equal footing with Russian students, has not been proved. Do some people require additional assistance?

Yes, that happens. The standards for secondary education differ from country to country. The striking difference for software engineering field is that already at school level kids in Russia have some programming classes, participate in Olympiads and get supervision from university staff. This is different from school programs that foreign students had. And that is why certain difficulties arise in their studies. We have already started thinking that the program might need to be partially adapted. Whereas in the first-year domestic students easily passed after the first session, with some of them even exceeding the required level, international students barely made it through – simply because they had a different level of preparation. And that is why we had to give them additional courses on mathematics and programming – the students themselves reached agreement with the professors to teach them. There was one case where successful Russian students would help the others pull through. They might turn up at a university, request the key from the study, and the high achievers would help the weaker ones. The international students also joined them there.

Do you plan to expand the selection of countries for international students?

Every year I think about this and dream that we might succeed at some point. However, the rub here is not our

program, but the environment that has been developed here. I myself, as a European student (I was at one point), would find it expensive to come to Russia to study. The most popular countries are the Netherlands, Germany, France, where study costs approximately EUR 2,000-3,000, whereas our program costs slightly more – EUR 3,500. In addition, you need to fly here, and then you have the longstanding historical stereotypes about Russians and bears, etc. – these are all obstacles for students from Europe who might attend our course. Here, you need to form a very strong program brand as such, including English language, rankings, etc. You can't do this in one or two years. You need more time.

What recommendations can you give to universities and professionals specifically responsible for international students admission? Is there a universal recipe for success?

First, you should not forget that the study program and the university today are a business model. When we launch a program, we have to consider whether it will recoup its costs or not, and also, like any other product, whether it needs marketing and advertising. I see this as one of the biggest problems. Several programs have been launched and this is probably the reason why HITs was a success, in that the guys did not expect any help and developed this as the business model. The contents of the program are what you will sell directly, and you need to think about how you will sell this. Obviously, when you create a program, you yourself know it,

and, well, love it and think, – wow, my program is the best. Anyone who creates such a product will love it. And then disillusionment follows when nobody turns up or hardly anyone enrolls. And this leads to the question – why?..

And most importantly – you need to plan. Any program must be worked out, analysed in detail and planned. If you are launching a program in 2019, then you should have thought about the technical issues and promoted it back in 2017 so that you have enough time to actually make it happen.

Tyumen Industrial University:
Higher Engineering School Engineering Generation (HES EG)

PROJECT-BASED LEARNING AND THE ENGINEERING MINDSET

Against the backdrop of strong Soviet engineer training, the current crisis in engineering education in Russia is hard to take. In a recent study by MIT entitled "The global state of the art in engineering education", which caused a stir internationally, there are no Russian universities among neither acknowledged nor rising leaders. Several Russian higher education institutions reject or debunk this problem, and change processes are more likely to be peripheral than systemic. The Higher Engineering School Engineering Generation (HES EG) at Tyumen Industrial University is an example of a radical review of the educational process to prepare the engineer of the future.

Vera Volyanskaya
Researcher and Analyst of SKOLKOVO Education Development Centre

In the case of Tyumen Industrial University – which works traditionally through close ties with industry – the first signs of alarm came from their industrial partners, moreover, from key partners – in the oil & gas industry. Alexey Pimnev, Head of the Higher Engineering School EG Project, says: "At one forum we were told that the quality of our graduates was

deteriorating with every passing year; they didn't have the latest knowledge, and even if they did know something, they were slow on the uptake and couldn't provide answers." At the same time, competition became increasingly perceptible: workplaces in the oil & gas sector of Tyumen Region – a key target market for Tyumen Industrial University graduates – were gradually starting to be filled by the graduates of other universities.

The standard reaction of universities to such signals from the market is to double up on existing practices, which means more focused work with departments and more control. The team of transformers of engineering education at Tyumen Industrial University adopted a different approach and did not seek to simply close the existing gap: it became clear that the engineers of the future capable of articulating answers to questions that have yet to be raised cannot be prepared by simply improving the existing educational process. Any substantive restructuring requires the transformation of other variables: starting with work with professors and ending with the educational space. Alexey says: "As director of the institute [Institute of Geology and Oil & Gas Production], I did not see any opportunity to implement the project at any of the existing structural units of university. To launch the process, we had to think in terms of a greenfield project." This is when the team of transformers was sent on a fully-fledged "internal business trip in a neighbouring building" in order to disconnect from the everyday tasks and dedicate themselves to the greenfield concept and the architecture of the new study programs.

Project-based learning from the first day

The new bachelor's program "Oil & Gas Engineering" is split into two major blocks: during the first two years students acquire general engineering competencies (engineering "core") that serve as the base that enables them to choose a profile in the third and fourth years. Alexey says: "We did not immediately compartmentalise them into profiles: we want them to get an idea not only about their workplace, but also the technological chain as a whole."

Project-based learning is where the program differs most from other programs at the university. It began even before the program started: at the end of August the students met up during different team-based tests to design and assemble a floating device that can cover 50 metres directly (Project "Ship"). The idea was borrowed from Olin College of Engineering and is a popular first project for a number of contemporary engineering programs. This made it possible to bring together project teams balanced in terms of academic preparation and personal preferences of students, who have already started on the next project at the beginning of September – "Rube Goldberg machines". The students had to design Rube Goldberg machines based on the motifs of Mikhail Bulgakov's novel "Master and Margarita" (each team was given a chapter of the novel). The project made it possible once again to introduce the rules of future project-based learning and spotlight the individual qualities of the students. The first semester ended with the project "Arctic Wind" (development of the propeller of a wind generator).

Ruslan Galikeyev
Director of the Educational program "Oil & Gas Engineering", Higher Engineering School EG

Project "Rube Goldberg machines"

We started from an understanding that when students immerse themselves in the educational environment of a university, they find it hard to adapt. They don't know each other, worry about their social status, and, as a result, communication is difficult, in particular, horizontal communication. We studied the vast experience of universities in Russia and abroad on how students become immersed in university life, including the cases of Moscow Polytech, Olin College of Engineering and other universities.

The "Rube Goldberg machines" project was implemented offline jointly with the lecturers. Also, the online platform "Lectorium" and personally Yakov Somov

helped to launch the online course "Rube Goldberg machines" to serve as a support function for the students.

The topic "Master and Margarita" was not selected randomly. We wanted the students to describe the contents of the literary work of art in the language of engineers and in this way show that the humanities are inextricably linked to engineering creativity.

Project
"Arctic Wind"

The idea emerged from analysis of the activity of oil & gas companies developing the Far North. Alternative sources of electricity are required during development, and that is why wind generation has become a promising source of alternative energy supply.

Students had to develop the propeller of the wind generator which would trigger the power unit and generate electricity. During the work the students studied the power generation market, the strategies on alternative energy sources of Russian and global companies, and then started developing their own propellers. The form and design of the propellers were limited only by size and wind speed. The strength of the current and voltage developed by the units were assessed as the result.

Through this project we tried to show the students that today's engineer must have a breadth of knowledge in both technologies and tools through which they can implement an idea.

119

The project of the second semester "Oil & Gas. Exploration and Drilling" was already a full-blown introduction to the profession: based on anonymised geological prospecting data submitted by industrial partners of the university, the students had to create a physical model of the geological profile, find the pay zone and present it innovatively. The focus was also on the development of the communication and presentation skills: in the first projects the students had to proactively showcase their work in social networks and on the projects' webpages, while in the "Oil & Gas" project they learned how to work on professional presentations and the delivery of content to experts. "We tried to show the students that saying the right things is only half the battle, while knowing how to speak professionally, applying the correct professional terminology, is valued twice as much," says Ruslan Galikeyev, Director of the Educational program "Oil & Gas Engineering" at Higher Engineering School EG. In addition, the students received an opportunity to expand their area of professional expertise through weekly consultations with professional engineers from the necessary focus areas, and with university professors.

The experience of the first year enabled the Higher Engineering School team to modify the contents of the projects for the next intake of students: the contents of certain blocks will change and there are plans to add a larger design part. Second-year students will work as tutors for first-year students, helping them adapt to project work regime (the first-year students of the first intake needed almost the entire first semester to get into the groove). The hypothesis is that the actual complexity and intensity will enable students to choose their profile more self-consciously in the third year, notes Alexey.

Master's program "Digital Transformation of the Region"

At the time of the Higher Engineering School EG design, the master's program was immediately positioned as something other than the continuation of the bachelor's degree: both in terms of content and the profile of the applicant. You can be admitted to the master's program "Digital Transformation of the Region" only if you have no less than two years of work experience. "We invite to the master's program anyone who already has the clear demand for specific knowledge. We don't impose the agenda, every master's student forms their own individual plan depending on the sector they are from and the problem they have been working on," says Alexey, who is also in charge of the program. The program's focus area "Information Systems and Technologies" is topical today for all sectors and makes it possible to assemble students from different profiles under a general framework. Project work is organised intensively, and every two weeks master's students attend a project session where their solutions are discussed and problematised. A key element was also the design of the study space: the students of the bachelor's and master's programs study in the same building, frequently run into each other and observe each other's work. In future it is planned that master's students, in particular, will be able to involve bachelor's students in their projects.

The engineering mindset and the image of a graduate

However, just introducing project-based learning is insufficient to prepare the engineer of tomorrow. The content linked to the project-based learning is key: are we simply changing the format while maintaining the same content study program, or are we talking here about preparing a new type of engineer? The global leaders of engineering education abandoned a long time ago the image of a graduate as a specialist who professionally implements a complex sequence of actions – this is not enough. More and more focus is placed on the "engineering mindset", in other words, the ability to come up with a new engineering solution taking account of the bigger perspective.

Alexey Pimnev notes: "What do we mean by the engineering mindset? We didn't think about this issue straight away. I am not convinced that the team and I have come up with a definitive understanding of this term; we continue this discussion at each strategy session... Whereas previously we taught students a set of actions, now we want them to be able to understand and reflect on these actions: how this happens, why and what it leads to. Take one example, engineering graduates often lack an understanding of economic categories – this is the first thing that employers tell us. Secondly, this is an understanding of the environmental impact, how the ecology can be affected. Employers don't talk much about this, but it can be heard from global trends. The third area is broader: how do engineering solutions and their implementation affect mankind, society? In the next academic year, the Higher Engineering School EG is planning a series of lectures on this topic in cooperation with the School of Advanced Studies at the Tyumen State University."

There is no single definition of the engineering mindset and the image of a graduate: each university forms it for itself. Determination of one's own identity – in the educational, research and innovation space – is critical for the university. It is only at this point that the university becomes "understandable"

"Whereas previously we taught students a set of actions, now we want them to be able to understand and reflect on these actions: how this happens, why and what it leads to"

**Alexey
Pimnev**
Head of the Higher
Engineering School
EG Project

for stakeholders: students, industry, the state, and also clearly positions itself in respect of competitors.

The Higher Engineering School EG specialises in cross-cutting technologies for engineering. One of its key partners is the Tyumen-based company Organisation of Cognitive Associative Systems (OCAS), which focuses on neural network developments. Alexey says: "On the one hand, these are purely pragmatic issues – the company needs graduates who know how to work in a specific way. However, we will retain the competencies obtained from cooperation at the School."

As well as cooperation with industry, partnerships with technology leaders is another tactic that makes it possible to "access" competencies in promising areas. For example, in the area of modelling Higher Engineering School EG has established a partnership with the Institute of Advanced Manufacturing Technologies of Saint Petersburg's Polytech: their professors give lectures for the master's students of Higher Engineering School EG (that can also be attended by bachelor's students).

"This is you who should give the answers"

The concept that has yet to be implemented is the establishment of interdisciplinary student teams: the team of the Higher Engineering School EG has come to realise that engineering today cannot be monodisciplinary. Alexey says: "We haven't had enough time to interact, communicate and explain what this project is and why our partners need it. This year was also explanatory."

The second important vector for the project is to establish the general engineering core for the entire university. This is being handled by the project team of the Higher Engineering School EG. The general engineering core aims to form a single portrait of an engineering student who has basic engineering competencies, and also to facilitate the establishment of interdisciplinary project teams at the scale of a whole university. Ruslan Galikeyev adds: "This will also make it possible to form the centre for project-based learning at the university. It will facilitate the transformation of the educational environment in the university and attract talented students."

You can often encounter the view that greenfield projects are "toys" or "experimental prototypes". Some even perceive them as the actual "disruption of the system". Veronika Efremova, Rector of Tyumen Industrial University, says: "I like thinking with them. My role here is that of a contemplative guard [and] there are also expert boards, and interaction with partners... This offshoot needs systemic protection. I assumed the task of exhaustively explaining the idea to anyone who comes and asks who they are." There are a number of obstacles facing a greenfield project: ideological, organisational and governance

related. The process is without a doubt accompanied by limited resources and opposition to new norms. However, the answers on how to circumvent these should originate from the actual transformers – the creators of the project – and not from the university governance.

Higher Engineering School EG is still at the development phase. The team is working on the substantive core of the study programs and the creation of a comprehensive engineering practice at the School in cooperation with internal and external partners. Only the existence of engineering activity as such within the School's boundaries will enable the School to establish its own definition of the engineering mindset. Linking the latter to the educational process will facilitate the creation of the School's unique project-based learning method – the method of Tyumen Industrial University. Without these two components, one cannot talk about the fully-fledged transformation of engineering education (instead of mere improvements).

"I like thinking with them. My role here is that of a contemplative guard [and] there are also expert boards, and interaction with partners... This offshoot needs systemic protection. I assumed the task of exhaustively explaining the idea to anyone who comes and asks who they are"

Veronika Efremova
Rector of Tyumen Industrial University

**Irkutsk National Research Technical University:
Communication Space**

THE SIXTH COMMANDMENT OF TRANSFORMERS, OR YOU NEED TO TALK TO PEOPLE

Viktoria Aleeva

Analyst, SKOLKOVO Education Development Centre

Normally, the rector takes part in discussing only the most significant decisions to be made. However, the practice shows that if the rector is not included in every level of communication during the transformation phase, then change processes can lose their initial impulse.

Until now, the conventional wisdom has been that communication must be aligned with standard protocols. However, during the transformation process, other rules are in effect. The more official the format, the less effective it is. That is why you need to look at various approaches and try different communication styles for different management levels. **Mikhail Kornyakov, Rector of Irkutsk National Research Technical University (INRTU),** shares his experience.

Mikhail Kornyakov, Rector of INRTU

How do you see the development of your university? What is the new mission of INRTU?

In my opinion, the main mission of INRTU is to become the driver of the region's socioeconomic development. This is an important and difficult objective and different groups of stakeholders should be involved in its implementation. I believe that transformation of the university starts with openness, overcoming regulatory and administrative barriers and the conservative attitude to life.

We want to change the public space of our university and campus and make it as accessible as possible for Irkutsk's citizens, factoring the needs of the city's students and city dwellers. Our team is interested in creating new vibrant economy, services and businesses near the university, ensuring that the university attracts the entrepreneurs and facilitates the implementation of their ideas and the creation of new joint projects.

What are the key areas of change at INRTU? How is the university model changing?

The established model of regional universities is not contributing to the perception of their role as training centres of cutting-edge, highly skilled staff, research and innovation. The market operates separately from universities, and any points of intersection are local. Changing the existing situation is a serious challenge for the university.

In the past, Irkutsk Polytech prepared staff for most of the region's industries. The tired phrase "University as the driver of the economic development of the region" is beginning to assume a new meaning when business has its own interests at heart, mutual relations with the university start to gain traction based on a different logic, informal partnership dialogue appears and there is a different interest. This is a slow process, but you can already see the first offshoots. In particular, we are working together with Gazprom Dobycha Irkutsk on the status of Gazprom's flagship higher education institution. To achieve this goal, a great deal of work has to be done, considerable joint efforts must be invested, and new communication model must be created, so that we end up with the launch of joint study programs, products, R&D, etc. Both the employees of the university and companies are involved in this process.

Why did you decide to change the traditional type of communication at the university?

You cannot transform the university on your own, without a team of people who are on the same page. It is important to include as many employees, professors, partners, and, naturally, students into the process as possible.

We started with Andrei Volkov's visionary lecture on the role of the University in today's world. Then we had the first strategy session. Over the course of five days we discussed the university's pressure points, compartmentalised them and determined what was reducing our effectiveness, in a deep dive mode. As a result of intense work, we came up with promising transformation projects and felt inspired to present them to the university

Strategic session of INRTU

Source: Press-service INRTU

community. We delivered a public presentation, invited members of the academic council, the heads of the administrative services, and other stakeholders. Consequently, we were subjected to severe criticism from our distinguished professors who told us that we didn't know the history and traditions of our university. Some of them perceived the submitted ideas as an affront to the honour of the university. Others looked at us as if we were fantasizing.

So, our first presentation was a fiasco. Today, two years later, however, I think that this was a necessary step. On the one hand, we forced our critics to think, and on the other hand, we ourselves thought about how to organize the communication in the right way and engage everyone at the university in the transformation process.

We have also determined priority areas. The most important were personal meetings of the rector with the university's leading professors, communication with them, and their involvement in change management projects as experts. Subsequently – a large-scale educational campaign on the problems and development prospects of the university, and examples of global best practice. Invitations for visionary and expert lectures dedicated to the topic of the transformation of higher education were mailed.

However strange it may seem, the most effective tool was the general chat in Viber entitled the "Development Strategy of INRTU". Initially it had been created to organise the first strategy session, and then we included our critics. And as the plans, specific results, links to publications and much else besides were discussed in the chat and presented, then naturally our critics and opponents of change became involved in the process, started

to propose their own ideas, participate in the projects, etc.

The next communication issue was the lack of understanding and the failure of administrative divisions to adopt the transformation processes. To remove the barriers, we used a tried and tested method and also included them in the general chat "Development Strategy of INRTU".

For subsequent strategy sessions, we invited the representatives of different departments in teams: finance, public relations, international, HR and others. Now, specifically, the financial department and accounting department don't ask why a specific project is required, they don't say that this is impossible. On the contrary, they become involved, they try to find alternative solutions in difficult situations – it became far easier to talk to people once they understood the general transformation goals and objectives of the university.

And we also have our students. We realised immediately that you couldn't make a revolution for the people without their involvement. We applied the same approaches: invitations to the heads of structural units and participants of student design bureaus in teams working at strategy sessions: inclusion in the chat of the heads of the student trade union, the department of the student scientific research project, student construction units.
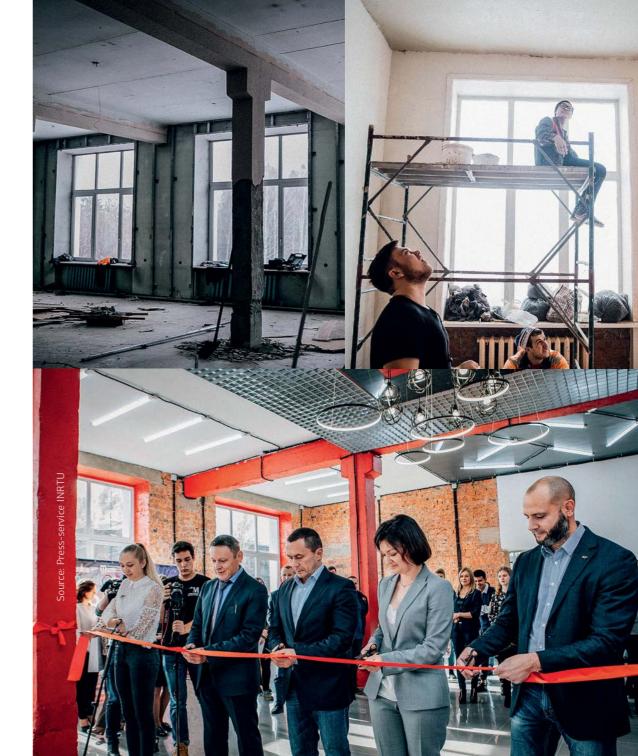
Incidentally, I would like to mention our work to invite students to change the public space. We proposed that the student construction units take the premises of the old library and revamp it for co-working. The students themselves created the design project, tore down the walls and built a new

modern space for the team and project work. We continue applying this principle today. The students make course and diploma projects on making changes to academic buildings, corridors and other public spaces of the university.

We understand that it is not enough to appeal to employees and students. It is no less important to involve our partners in these processes. Initially, we used the following format: the representatives of partner companies (CEOs or their deputies) would come to the final presentations of the teams at the end of a strategy session and deliver an expert assessment. However, here we clearly saw that they didn't actually understand what the teams were talking about and found it difficult to understand the gist of the proposed projects during the ten minutes of the presentation. This was because they had not worked with us from the very outset, and had not been involved in the actual context.

We understood that the actual CEOs would not be able to attend the five days. Therefore, we came up with the format of partial immersion. On the first day of the strategy session, the department heads of the enterprises would come to the university and work for one day as team members, designating the specific problems that must be resolved through interaction. It is essential that at the end of the first day a representative of the enterprise, and not an employee of the university, talks about a problematic issue and the assignment for the team. Then the enterprise representatives leave, and we invite them back again on the last day of the strategy session, this time together with the CEOs. They would work for a half day in groups, and then take part in the final presentations and discussions.

Source: Press-service INRTU

It should be noted that the representatives of the regional authorities and the development institutes of the region participated in a strategy session based on the same format. We included the representatives from both of these groups in the well-known chat "Development Strategy of INRTU".

The next difficulty that I encountered involves maintaining morale during the implementation stage. One frequent problem is that initially people are determined to implement their plans, but over time they lose the drive, because beautiful ideas require a systemic approach and detailed elaboration, and this is routine work...

It is clear that we could have issued an order and appointed the parties responsible. However, in this case it is better when people perceive this role as their personal responsibility and heartache, and implement the project with the optimism and persistence originating from them, and not from the rector. That is why we announced that initiatives would be accepted from anyone ready to try out development transformation projects in their divisions – departments, institutes.

This was discussed in the general chat where the principle of competition works: when someone indicates their readiness to assume responsibility for implementation of the pilot project, others also try to step in. As a result, we received eighteen initiatives – it was only afterwards that an order was issued on the launch of pilot projects and the parties responsible were appointed. In addition, to avoid losing momentum, communication and interaction, every Thursday at 5:00 PM interim results are presented on two-three projects, problems are discussed, plans are adjusted, and sometimes on the same

Source: Press-service INRTU

days we have expert or visionary speeches. Taking account of existing experience, we made these meetings public: they can be attended by any employee or student. The invitation is e-mailed to the addresses of all the employees of the university. I always conduct these meetings in person, so anyone who turns up also has an opportunity to communicate with the rector.

What recommendations would you give to rectors and transformation leaders?

Firstly, think about the university and its transformation within the remit of three dimensions: geography, partnerships, and projects.

Secondly, try to involve as many employees as possible in the transformation ideology, so that all the changes are their personal goals and objectives, and not only the desire of the rector.

Thirdly, be constantly on the lookout for new ideas while establishing communication both within the university and also with external stakeholders.

What do you do?

Andrei Volkov, Academic policy advisor,
Moscow School of Management SKOLKOVO

SEDeC has taken on a major challenge. If we use our own boring language, we call this a program – a program for modernisation, or to be more accurate, the transformation of Russian higher education. We are aware of the scale. We know we cannot change all of the universities and the country as a whole. However, we expect and are working to ensure that people who are interested in change can rely on our practice, expertise and experience. And this is what we do at SEDeC.

Andrey Shcherbenok, Professor of Practice

We are engaged with the transformation of basic processes at universities. This is how our Centre differs from standard programs for university managers. We are trying to trigger change inside the system, with varying levels of success.

Gayane Nalbadyan, Head of educational programs

We – our Centre, our team – are responsible for preparing a new generation of higher education leaders. The term "higher education" should be understood not simply as the mechanism of knowledge transmission to students, but as the process of creating a new culture, a new type of organisation, new people who have a different level of awareness of their activity and responsibility for their actions.

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

We are preparing a new generation of higher education leaders, transformational leaders. We are establishing a community of leaders who are responsible for changing the system and the future of our country as a prominent player on the global education market.

Vera Volyanskaya, Researcher and Analyst

We neither consult nor teach. We design change management projects together with you, university leaders – for your university, a specific division, etc. We rely on our Method and experience, but we never do anything for you. The transformation of the university is your project.

Viktoria Aleeva, Analyst

We are working on a major reform of higher education. We operate in different formats. Through cycles of strategy sessions, we help university teams transform their universities. Through such programs as the Rectors School, we prepare fundamentally new university leaders and form a professional community. Each format overcomes challenges on the path to achieving one goal – the transformation of Russian higher education.

Olga Nemirovich, Head of educational programs

Transformation of education systems: schools, technical colleges, universities. Development policies in education institutions. Strategic planning in education.

What is the mission of the Centre?

Dara Melnyk, Head of the research group

To serve as the integration point for transformation processes in education. To launch some of the processes, support others, and subject the rest to harsh criticism, as far from all the changes are improvements.

Vera Volyanskaya, Researcher and Analyst

To make people understand that universities are not static or isolated organisations, or at least, that this is no longer the case today. As in the case of any living organism or structure, they should evolve and change: some things should grow from within, some should be transformed, while some should inevitably die. Any other form of existence implies unconscious existence, inertia, and gradual "disappearance" in the eyes of all the stakeholders – students, industry, the state, etc.
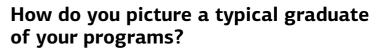
Andrey Shcherbenok, Professor of Practice

The intended purpose of the Centre is to elicit a sense of conscious dissatisfaction with their professional activity in our participants and help them find ways to change it.

Olga Nemirovich, Head of educational programs

To create the right conditions for reasoning and reflection.

How do you picture a typical graduate of your programs?

Olga Nazaykinskaya, Director, SKOLKOVO Education Development Centre

All our graduates are different, and this is only normal. However, if we are talking about graduates who continue the transformation process after completion of the program, then these are people a) who have a position, b) have a vision of the future and the target model, c) are capable of taking the heat, d) maintain relations with the alumni community of the Rectors School and with us, and e) do sports. :)

Vera Volyanskaya, Researcher and Analyst

A person who sees the problems and not the symptoms. Someone who knows how to differentiate actual substance from formalism and emptiness. Someone who was able to break the boundaries of their own convictions, social structures and universally accepted norms and look at their university – and their role there – from a completely different angle.

Gayane Nalbadyan, Head of educational programs

Our graduates are visible from afar, not because they wear the badge of SKOLKOVO alumni on their coat, but because they speak and think differently and simply can no longer do otherwise.

What kind of people work at the Centre?

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

Concerned individuals. This is essential. Anyone who is indifferent doesn't stay long at the Centre. What we do cannot be classified simply as "work". You can only relate to this as "your own business", only the position of the owner fits what we do. If this is your business, then you will find it natural to live in airplanes, work 24/7, always be accessible and always think about your business. And, most importantly, this should not irritate you. For if you had your own bakery or restaurant, you would consider it normal to think about this business, even on a Sunday evening. Because this is YOUR business. So SEDeC is the personal business of everyone working here.

Vera Volyanskaya, Researcher and Analyst

Sometimes they may look implacable. In actual fact, they are dedicated and inspired, know how to formulate and assert a position in principle, and are open to the creation of new concepts.

Dara Melnyk, Head of the research group

From the outside, we probably look strange. We present concepts in the form of schematics. It is so important to us that words clearly transmit the intended meaning that over time we have established our own characteristic, precise and almost technical language. Most of us do some kind of sport, as otherwise our work schedule would be impossible to maintain. There is another component of our common culture – you gradually run out of patience on pointless tasks, formal events and empty discussions. There is simply no time. I feel very honoured to work in this environment with such people.

Elena Ponomareva, Head of educational programs

Anyone who works at SKOLKOVO Educational Development Centre turned up for a reason.

What makes you proud?

Dara Melnyk, Head of the research group

The fact that my activity, our activity is part and parcel of a major and important mission. If it transpires that you are changing how universities perceive their role, everything changes: the graduates, their view of what is right and necessary, their vision of the future and their goals; how research is organised and what it may involve; the scale of higher education institutions and their place in the major global process of converting ignorance into understanding, and problems into solutions. Some of our work sinks like a dead weight, like fragments of ships foundering on the woes of daily life. However, sometimes our words and schemata clash with your views, lighting a spark, and then actual projects appear and come good, for the sake of something positive, for a reason. There are more and more such projects. This is simply a cumulative effect.

Gayane Nalbadyan, Head of educational programs

I am proud when I see the changes in people when changes occur at the university/the organisation. When a new vision and horizons of actions appear. I am proud when projects initially take shape in our minds and are then implemented in reality.

Viktoria Aleeva, Analyst

I am proud of the SEDeC team. The entire team is a fully-fledged organism. Specifically, an organism, and not a mechanism, as parts of even the most complex mechanism, the screws and bolts and other "hardware", are boring and standard components when taken separately. And for an organism, this is not the case. Each body and cell are amazing, and the more you know about them and their potential, the more you admire them. And that is how it is in our team.

What do you perceive as risks in your activity?

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

There is one phrase I hear from graduates that I find simultaneously frightening and pleasant – "you have changed my life". And each time I think, have I changed them in the right direction? Only one thing consoles you and slightly "hedges" this risk: in the end, the individual, whose life has changed, adopted this decision on their own and assumes the same level of responsibility as I do.

Dara Melnyk, Head of the research group

One of the inevitable risks is the mutation of ideas. For example, the concept of the project appears at the strategy session. It is subject to several stages of criticism and modification. A lot of work still needs to be done, but there is a goal. And then the session ends and adjustments start to be made, as required by the specific situation. Social resistance? Instead of visiting experts, your regular faculty staff read visionary lectures in the elite track to the students. It is no big deal! What if it is unclear how to design one of the core courses? Just replace it with another one. Immersion in another city's space for two weeks is hindered by bureaucratic controls? Well, maybe you can also immerse yourself in your own city. And in this way vital elements are gradually separated from the model, and only the shell remains. Another example – the ideas from expert articles, lectures and statements. Sometimes my talking points are used to support the most unlikely initiatives, and sometimes I simply don't recognise them in the retelling.

What do you find hardest in your work?

Andrei Volkov, Academic policy advisor,
Moscow School of Management SKOLKOVO

One of the substantial, in other words, crucial, difficulties that we face relates to the vast scope and diversity of our work. I want to say a very simple thing. Universities no longer exist as isolated islands: they rely on individuals learnt at school, they operate in a specific economy of the country, depend on a specific region and the cultural code of the region. And when we start to expand the target of our work, we need to possess economic, political, social, and technological knowledge – and we cannot collect all this knowledge at SEDeC. And that is the key difficulty that we face. Another difficulty is technical – we would like to work with a much larger group of universities, but we have limited resources – first and foremost human and intellectual. We can afford to work with a small group – twenty or thirty universities, although we aim to be working with fifty universities.

Dara Melnyk, Head of the research group

Our work is multidimensional. You have a global dimension. You and I both need to do what we have chosen to do, better than anyone else. In the world! Any other approach would simply be a waste of time. Then there is the complex political field encumbered with the interests of different forces. There is the conceptual level and conflicting individual and collective subconscious perspectives of the world – what underpins your statement? For there is always something, you have grounds for your arguments, and we will never fully understand them. There is the issue of efficiency. And there is also the human element: people are fragile, and nobody has an iron will, in particular when it comes to transformational changes, and there is no absolute ethical sensitivity. You constantly have to take account of all these dimensions.

Andrey Shcherbenok, Professor of Practice

The most complex aspect is that we are fully aware that the participants in our programs have limited control over developments at their universities, even if these participants are rectors. They are not managing some fireball with cool directional steering, but instead have to rely on a low-speed boat with a loose steering wheel, which is furthermore moving on a river with a strong current, while the engines not always start up when you need them to.

Elena Ponomareva, Head of educational programs

Establishing the alumni community of the Rectors School. Taken on their own, they are successful managers who are transforming their universities, but we still have to form the driving force, a professional community. We have the prerequisites, we are working.

Olga Nemirovich, Head of educational programs

The most complicated and most inspiring is the need and ability to constantly develop and learn.

What do you feel ashamed of?

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

Of some of our graduates. Or to be more precise, of the fact that I (we) couldn't affect them, that we failed. When you meet someone a couple of years after graduation, they are very pleased to see you, they are full of emotion. However, there are no substantive traces of the program... And you feel so small and ashamed. Logically, I understand that "not all our graduates are equally useful", that it is a normal distribution when 10-15% of our graduates are "stars" whom you are proud of, while 10-15% of the ones missed out on the program, even though they were physically present at all the modules. However, each time I feel ashamed. And each time I think: where did I go wrong, where did I miss...

Viktoria Aleeva, Analyst

I feel ashamed when our participants perceive our programs as merely a formal procedure to obtain a "certificate". Changing such perceptions is part of our work, but sometimes we fail at it.

Gayane Nalbadyan, Head of educational programs

Frequently, we feel disillusioned when reality proves to be different from the discussions at the program or at the strategy session. You cannot say that this a bad result, it is simply different.

Where does the Centre expect to be five years from now?

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

If I believed in the linearity of development, then I would be able to answer this question easily, by simply taking data on the activity of SEDeC over eight years, and "prolonging" them for the next five years. However, it doesn't work like this. Development is not linear. That is why I don't rule out the possibility that SEDeC may not only increase many times when it comes to the volume of work (for example, we aspire to work with 50 universities and 3,000 graduates of the Rectors School), but will also be focusing on the transformation of other areas, accessing them through education and research. Personally I have been interested in the sports industry for a long time.

Gayane Nalbadyan, Head of educational programs

We talk a lot about the global nature of the University and entering the international space. I think that the next important step for the Centre will be the attainment of a new level and inclusion in global projects.

Olga Nemirovich, Head of educational programs

Applying our tools to our own development, self-analysis.

What is the SKOLKOVO Project Method?

Andrei Volkov, Academic policy advisor,
Moscow School of Management SKOLKOVO

I would say that the SKOLKOVO Project Method shows you how you must think about the future. In this case, specifically the future of educational organisations, their structures, etc. It also has an instrumental function, like a tool, or a toolbox: in one place you need wrenches, in another, screw keys, in another saws, chisels – in the same way, when thinking, you need schemata, objects, concepts, categories. You have these rules and tools that are extremely important and gathered into a common approach, they constitute the essence of the SKOLKOVO Method. It is important to understand that we didn't conceive it on our own. We draw on the major traditions developed in our country and not only in our country and leverage the longstanding development history of this Method – dating back fifty years, at the very least. We have modified and tailored it to the objectives facing us at SEDeC and Moscow School of Management SKOLKOVO. Everything is very simple.

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

The Method is the reason why we are able to avoid the appearance of a list of banalities and "decorative" solutions after many hours of exhausting discussions: thanks to the Method, we can (possibly for the first time in our lives) even experience physically our awareness of a problem: thanks to the Method, we can reconfigure ourselves, even though we hadn't set ourselves this goal at the start.

Andrey Shcherbenok, Professor of Practice

Problematization + idealised design.

How can I join you?

Olga Nazaykinskaya, Director,
SKOLKOVO Education Development Centre

As a participant? Simply enrol in the program :) As an employee? Write to me or any member of the team. Usually, if we see 'SEDeC-ness' in an individual, we find an opportunity to include them in our projects, and subsequently relations develop on an individual basis.

Dara Melnyk, Head of the research group

"Have space suit – will travel."

Olga Shakuro, Senior Administrative Manager of educational programs

There are several simple steps. The key thing is desire. Select a program of interest to you, find out when it starts, and file an application. As administrators of the Centre, we are always with you and can help you find the necessary program or put you in touch with the necessary people.

SKOLKOVO Education Development Centre has been operating at SKOLKOVO Business School since May 2011. Olga Nazaykinskaya is the Director of the Centre.

Focus of the Centre:

- Delivery of educational programs and strategy sessions on transformation and development management of educational organisations.

- Support for federal and international programs aimed at establishing and developing a high-potential candidate pool in the area of education.

- Expertise and research on the development and management of educational organisations.

The projects of SKOLKOVO Education Development Centre include: the educational programs "Rectors School" and "The Next Step for Schools"; programs based on computer simulators "Universities World Rankings" and "Management of Educational Ecosystems"; joint educational program with the International Labour Organisation "Region-Profi", and also the online courses "Universities: Transformational Governance" and "Education of the Future". The Centre provides organisational and analytical support for the program "Global Education".

An extensive expert community and alumni community have formed around the Centre, which are changing the landscape of contemporary education. Since 2011 the managers of over 220 universities and educational organisations have been trained in the programs of the Centre: 1,000+ graduates of the program "Rectors School"; 3,000+ participants of strategy sessions; 12,500+ participants in the online courses "Education of the Future" and "Universities: Transformational Governance".

The Moscow School of Management SKOLKOVO is one of the leading private business schools in Russia and the CIS, established on the initiative of the business community in 2006. The founding members of the business school are 10 Russian and international companies and 10 private entrepreneurs, each a leader of Russian business. The SKOLKOVO Business School offers educational programmes for business at all development stages, from start-up to major corporation accessing international markets.

In 2019 the Moscow School of Management SKOLKOVO received international EQUIS EFMD accreditation, awarded to only 1% of business schools globally. The Moscow School of Management SKOLKOVO ranks first among Russian MBA programs according to mba.su ranking based on evaluation by the graduates.