

## MTSDT 2019

### Modern Tools for Sustainable Development of Territories. Special Topic: Project Management in the Regions of Russia

#### INTEGRATION OF EDUCATIONAL MODELS OF DIGITAL AND CLASSICAL UNIVERSITIES

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#### *Abstract*

The analysis of the relevance of the educational models of the University of NTI 20.35 and the classical university is carried out on the example of Yaroslav-the-Wise Novgorod state university, their main differences and possible ways to integrate and create a common model. The educational experiment took place in the form of a joint intensive program on the basis of NovSU on 09.12.2018 in the areas of the NTI markets: Neuro, Aero and Technet. The analysis of factors contributing to the updating of the coordination of conflicting systems of digital and classical education in the Novgorod region is presented. The article describes the step-by-step organization of the stages of introducing the value foundations of the University of NTI into the structure of the educational activity of Novgorod State University, preparation from the development of the model through the creation of a developing environment to the protection of student projects. The methodology of integrating the individual educational trajectory of the student on the digital platform of the University 20.35 and the project activities of students to develop projects for the NTI markets in the educational plans of the university are fully presented. Considerable attention is paid to the risks analyzed during the design of the intensive course and taken into account in its implementation. The success criterion for the implemented integrated educational model is a lot of attention from the academic community of the country.

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**Keywords:** Educational model, intensive course, NovSU, project training, University 20.35.



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## 1. Introduction

In determining the quality of higher education models and shaping its national system, the state always plays the leading role. In modern conditions, these models should provide incentives and conditions for the preparation of highly professional human resources corresponding to the demand of the labor market of any level (Dudin, Bezbakh, Frolova, & Galkina, 2018).

The need to change the content of education, taking into account the priorities of the country's scientific and technological development, primarily on the basis of new technologies and digitalization, is noted in the appeal of the President of the Russian Federation to the 2019 Federal Assembly, which is laid down in the Federal Program "Digital Economy of the Russian Federation" dated on July 28, 2017 and National project "Education" for 2019 – 2024 dated on 24.12.2018. The first university in Russia providing professional human development in the digital economy was the University of NTI "20.35" (UNTI). It focuses on training company leaders, participants in the National Technology Initiative (NTI), and professionals working in new global markets. The model for presenting the result of educational activity in it is a digital competency profile, marked out by areas of knowledge and skills and including digital traces of students.

## 2. Problem Statement

Between educational models, the integration of which is relevant, there are a number of fundamental differences, from which it was necessary to choose which ones should be taken into the general model and which would pose significant risks for it. The classic fundamental foundations of traditional learning include:

- educational program (a set of basic characteristics, organizational and pedagogical conditions and forms of certification of education);
- diplomas (an official document on graduation and appropriate qualifications; giving the opportunity to work in certain fields at the positions indicated in professional standards. This type of documents is understandable to most applicants, their parents, students and employers);
- standards (guarantor of legal, organizational and economic foundations of education);
- professional activity (determined by professional standards, requires preliminary training);
- orientation to hard-skills (from FES 3 ++ to soft-skills);
- object relation to a student in a regulated assessment system; organizationally branched structure, affecting many departments, ensuring all legal norms of education and compliance with regulations.

University Model 20.35 includes (Loshkareva, Luksha, Ninenko, Smagin, & Sudakov, 2017):

- personal (by order) / individual (choice from the available set) educational path and assessment of competencies;

- real activity as a source of a request for competencies (response to the challenge of new and constantly changing conditions);
- focus on cross-contextual, existential skills that are highly demanded by employers (Gruzdev, Kuznetsova, Tarkhanova, & Kazakova, 2018);
- digital profile of competencies (an array of digital data marked out by areas of knowledge and skills. It is at the experimental stage);
- a system built with quick response to changes, culture of errors.

### **3. Research Questions**

- 3.1.** What are the conditions for the successful integration of fundamentally different competence and organizational models of a digital university and a classical one?
- 3.2.** What are sufficient and effective steps needed to introduce and test a new educational model in a classical university?

### **4. Purpose of the Study**

The aim of the study was to create a unique model for integrating fundamentally different educational approaches, testing it and analyzing the effectiveness of introducing elements of digital education, a project approach and an individual educational path in a classical university.

### **5. Research Methods**

The experiment included the stage of developing an educational model in the intensive format (from 17 May to 18 September 2018) and the educational intensive course “University 20.35 at NovSU” (from 18 September to 15 December 2018).

#### **5.1. Development of the interaction format (from May 17, 2018 to June 9, 2018)**

The basis for the development of the format was strategic sessions at which questions and tasks for each side were formulated. In May three launch sessions were held with the involvement of all interested parties, including students. In July, there was a series of design meetings at UNTI and a series of the first project meetings of the development team from NovSU devoted to key issues. In August there were meetings with UNTI and separately on finalizing and implementing the PR campaign (3 days), in September, the final version was worked out on all topics (5 meetings). Videoconferencing was the main format of operational meetings, more important in terms of making quick decisions in the conditions of unpredictable processes developing very dynamically. Since August 2018, such conferences between NovSU and UNTI were held through a university account at Zoom weekly and even more often when there was discussing of large events.

The interaction is documented in the form of a Memorandum of Understanding, an agreement and a partnership agreement between NovSU and University NTI to carry out work on the development of a

methodology for implementing project activities and building individual educational paths on the platform of University NTI.

### **5.2. Development of an intensive model (from July 10, 2018 to May 09, 2018)**

A working group was created, including 14 representatives of UNTI and 21 - NovSU, including: coordinator of the working group, consultant for NTI, PR manager, responsible for tutoring students, project manager, organizer of technical support, methodological accompanying student responsible, educational designer, tutors, mentors. A roadmap was developed with the definition of the main activities, responsible executives and the timing of the project. A separate stage of preparation was the organization of training and selection of tutors, as a key component of the implementation of the subject-oriented technology of individualization of the educational process, including: the development of reflectivity, internal motivation, professional orientation, becoming subjective student positions (Bayborodova, Belkina, Gruzdev, & Gushchina, 2018).

### **5.3. PR campaign and testing the methodology for selecting students and distributing them to project teams on the University platform 20.35 (from September 5, 2019 to September 18, 2018)**

The PR campaign included the educational marketing areas that proved to be most effective for creating a positive image of universities (Vetrova, Kabanova, Medvedeva, & Jukova, 2019): creating and maintaining a group on the VK social network, advertising video, outdoor advertising, posters and flyers, direct campaigning by representatives of the work team and UNTI in dialogue formats with students in classrooms, news stories on television, interviews with organizers, broadcast on radio.

The selection was carried out for students of all courses on the UNTI platform and consisted of 6 mandatory activities and passing at least one highly specialized test at the student's discretion on the following topics: neurotechnology, life cycles of startups, arduino, 3D modeling, Internet entrepreneurship, programming. The face-to-face selection element was recorded by the game engineers' activities of the leader and engineer in the game "Challenges of the Digital Economy", developed for the Intensive "Island 10-21" and adapted for NovSU, in which 80 people participated. Distribution into teams took place in a three-day Idea Generation Laboratory from Skolkovo Open University.

### **5.4. Educational model implemented at NovSU (from September 18, 2018 to December 15, 2018)**

The model included three components: a project, an individual educational trajectory, educational activities and a set of UNTI services.

Teams developed their own projects, while experiencing shortages of competencies. To build work on the project, a project work mentor was assigned for each team. According to the deficit, the team tutor helped to formulate an educational request and build an individual educational trajectory (IET). Some of the activities took place in the form of online courses and webinars, some in offline format (face-to-face events at the university site). The set of UNTI services for the organization of educational activities

included: selection of IET, access to online activities, addition of a digital profile, feedback in the form of comment on the event.

The training took place in 4 times for 3 weeks. The first time was aimed at finalizing and landing project ideas, testing ideas on potential consumers, distributing functions and roles in teams, creating a model of project stages, working in a team, with experts and consumers. For the second step, it was planned to create the first prototypes of the product, prepare a presentation clip, launch media support for the project idea, develop skills related to creating the product and support the project. For the third step, the prototypes were finalized, business proposals for the investor were prepared. For the fourth step, preparation and testing of the presentation for the investor, final protection of the projects was carried out.

### **5.5. Development of a methodology for integrating an individual educational trajectory of a student on the digital platform of the University 20.35 and project activities of students to develop projects for the NTI markets in the educational plans of the university**

This part is associated with the maximum number of risks that were analyzed during the design of the intensive course and taken into account in its implementation. The influence of teaching design was fully taken into account: the application of the theory and principles of adult learning, self-determination of learning, the means used to attract and maintain interests and involvement, planning, support and relevance of content, the use of students' internal knowledge, external motivation inherent in teaching and learning, means of integrating new knowledge into the real world (Latchem & Khanolainen, 2017; Puchkov & Zabavnikova, 2017). Students mastered the techniques of understanding and interpretation, self-determination and communication, interaction and coexistence, which are an integral part of subjectivity (Zobkov, 2019). Particular attention was paid to the analysis of mistakes made, as an opportunity to learn, to be aware of one's learning problems and to progress in acquiring new knowledge (Bersan, Țiru, & Dumitru, 2018).

## **6. Findings**

The unifying principle in the conditions of the recorded differences was the format of the experiment and the presence of their own interests in uniting each of the participants in the intensive course. So NovSU launched in a new format a limited number of students, teachers and employees who are as open as possible to the perception of new training formats. During the intensive process, regulatory documentation and recommendations for the implementation of this model in the form of reports were developed. The 20.35 University conducted testing and finalization of the digital platform for the development of individual educational trajectories of university students, provided free high-level educational events.

The possibility of reconciling two conflicting systems turned out to be as relevant as possible precisely at Novgorod State University for a number of reasons. In the strategy of socio-economic development of the Novgorod region until 2025, one of the development vectors is designated "Region – University", which ensures "transfer and continuity of competencies that allow to realize individual educational trajectories of personal development long in life, development of partnerships of participants

in the educational ecosystem”. The readiness of NovSU is indicated in its mission as an open system, to acquire the features and dynamics of a “learning university”, to form a social type of personality that is adequate to the requirements of the time; versatility. The readiness of the University at 20.35 was recorded by Dmitry Peskov, head of the Human Resources and Education Competency Center of the Digital Economy program, starting with “creating a pool of universities ... who are ready to work with the university, from collecting data and training neural networks to optimize student learning paths”.

Initially, 309 people registered on the UNTI platform, 80 participated in the game. The main selection process turned out to be: recorded the leader’s steady activity by game technicians in the game and test + game 25 people each , evaluated questionnaires describing project activities and passing the neurotechnology test – 8 people each , test “Internet entrepreneurship” – 5 people each. A total of 98 students passed the selection, among which two large groups should be distinguished: 25 leaders, 28 capable of project activities. As a result, the teams were inter-institutional, of different ages, of different levels of initial training and motivation of 3-7 people, fashion – 4.

During strategic sessions, considerable attention was given to the study of the possible risks of implementing the experimental model; therefore, at the time of its implementation, timely measures were taken to reduce them.

There has been developed the training program for the optional module “Educational Intensity of the University of NTI 20.35”, the NovSU Regulation on the procedure for the development of optional disciplines (modules), allowing to carry out the choice of elective disciplines in accordance with individual requests and the educational trajectory, the NovSU Regulation regulating the university teaching on an individual the curriculum, providing for a change in the forms and types of classes for the student according to the individual plan, including reducing the amount of contact work to reduce students’ workload. At each stage, work was carried out with motivation and resource status on tutorials.

Innovative forms of training were used: the Game “Challenges of the Digital Economy” from the NTI University, the “Laboratory for Generating Ideas for Technological Projects” together with the Skolkovo OUS, the NTI barcamp, the Battle Star Galactica game from Skolkovo, and practice-oriented from leading lecturers were selected as activities. This prevented a decrease in the intensity of immersion in the module due to the long implementation period.

The coordinator took over the function of negotiating and concluding an agreement with partners: through the manager’s channels, from other programs joint with NovSU (Motorika, Lorett, BiTronics Lab LLC, Copter Express LLC), UNTI (3D Education Association), and the Regional Administration (RPA “Kvant”, SDTB for RE LLC “BEKO”, OKB “Planet”, GEO Antares Software, LLC “Krasnaya Izba”, ANO TO Rus Russia). Initially, the working group did not include specialists to attract partners, which usually leads to a lack of partnerships for promising projects for investors, and the insufficiency of our own experts in the commercialization of projects.

A clear separation of responsibilities when the mentor is responsible for the project result, the tutor is responsible for team dynamics, motivation and the conscious choice of an individual educational path when accompanied by project activities by two or more specialists has reduced the risk of “blurring” of responsibility for the result of the work of the accompanying person and the formation of the students’ habit of not taking self-responsibility.

The directed work of tutors in teams with students of different courses on time recorded and leveled the insufficient involvement of younger students in the design work by the team, reducing their initiative, ignoring their opinions.

Initially the selected NTI markets are limited with those that are maximally developed and supported in the region: Neuro, Aero and TechNet. The students of intensive course are provided with technical laboratories of NovSU. These measures compensated for the slow updating of the material and technical base of the university, which reduces the ability of students to work on breakthrough technological projects, testing ideas on modern equipment.

Immersion of the NovSU team in the context of a digital platform during training and regular organizational and methodological meetings with representatives of the NTI 2035 University made it possible to transmit the principles of a digital educational platform to students, despite the low starting inclusion.

A well-organized feedback on the operation of the UNTI digital platform helped to reduce stress in relation to the test mode of its use, when interruptions, technical malfunctions, and high time costs for operations are expected.

A specialist in design work was appointed and strategic sessions on designing design work were held, the first working group of mentors was formed, since the implementation of project activities was a key factor in the development of the module. As a result, 12 of the 15 teams reached the final, five of which received grants totaling 300 thousand rubles, five continued to work on the project in the next intensive course. The winners were projects with passive-active rehabilitation of children with cerebral palsy; a gaming application that fights physical inactivity gives discounts and bonuses for movement; small-sized device for targeted data packet transmission over the Internet; quest application for Veliky Novgorod with elements of augmented reality; a mobile application for digitalization of higher educational institutions.

Self-education with the greatest efficiency is carried out in a professionally and personally stimulating educational environment of the university, where the interests of students, teachers, the mission of the university and its capabilities are combined (Anca & Bocoş, 2017; Gruzdev, Kuznetsova, Tarkhanova, & Kazakova, 2018), so all efforts were aimed at creating such an environment. The experience of NovSU was rated as successful by the academic community and the strategic initiative agency. In 2019, intensive courses were launched with the University 20.35 in 15 different universities of the Russian Federation. The introduction of such a program in all the supporting universities of Russia is considered.

## **7. Conclusion**

Yaroslav-the-Wise Novgorod state university is the first classical university that introduced a non-classical form of education in conjunction with the University of the National Technological Initiative “20.35”. The program was held on the basis of NovSU from September to December 2018 in the areas of the NTI Neuronet, Aeronet and Technet markets. The key to the integration was serious preliminary work to create a general idea of the interaction format and educational model, the study of possible risks, the speed of feedback in an experiment of high uncertainty. Supervision and methodological support by the

carriers of the value foundations of digital technologies has made it possible to maintain this focus in the context of the implementation of educational intensiveness in a classical university. The development of regulatory documentation and recommendations has allowed not only to set a precedent, but also to transmit the experience to interested parties. The educational intensive course has attracted a lot of attention from the academic community of the country.

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