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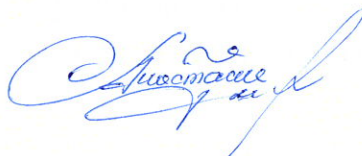
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INNOVATIVE FRAMEWORK FOR ORGANISATIONAL AND EDUCATIONAL CHANGE.
ETU "LETI" CASE/ ЭКСПЕРИМЕНТАЛЬНЫЙ ФРЕЙМВОРК В ОРГАНИЗАЦИОННЫХ И
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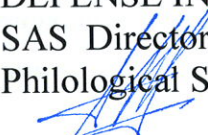
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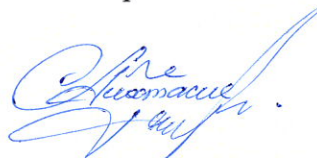

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GRADUATE THESIS

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LIST OF ABBREVIATIONS AND NOTATIONAL CONVENTIONS

- AL – Articulated Learning
- ASU – Adyghe State University
- COIL – Cooperative Online International Learning
- DBR – Design-Based Research
- DSTU – Don State Technical University
- ETU LETI – St. Petersburg Electrotechnical University LETI
- FVE – Further Vocational Education
- HE – Higher Education
- ID – Instructional Design
- IKBFU – Immanuel Kant Baltic Federal University
- MA X-HE – Master Program Experimental Higher Education
- MMC – Moscow Methodological Circle
- MEPHI – National Research Nuclear University MEPHI
- MISIS – National University of Science and Technology MISIS
- NPM – New Public Management
- PBL – Problem-Based Learning or Project-Based Learning
- PjBL – Project-Based Learning
- RBT – Revised Bloom's Taxonomy
- RnD – Research and Development
- SAS – School of Advanced Studies
- SEDeC – SKOLKOVO Education Development Centre
- SC – Social Constructionism
- SDL – Self-Directed Learning
- SEL – Social and Emotional Learning
- StrAU – Strategic Academic Units
- TPU – Tomsk Polytechnic University
- UTMN – University of Tyumen
- WES – World Educators' School (title of the innovative framework)
- YUSU – Yugra State University

INTRODUCTION

The master program Experimental higher education (MA X-HE) was introduced at School of Advanced Studies (SAS) as a response to resistance of universities to changes and transformation, preparing high qualified specialists with a wide range of expertise in different areas in higher education. This paper provides one of the MA X-HE student's experiences presented in a form of a case study and devoted to experiments in HE in frames of 2nd year internship. The experiment was aimed at satisfying requests of Saint Petersburg Electrotechnical University "LETI" connected with insufficient number of master's degree students. Based on the master's program revision and analysis of the institution, an innovative framework for organisational and educational change elaborated by a 2nd year MA student was proposed.

Action research method was used for investigating how implementing of a new innovative framework for organisational and educational change can influence the master's degree program development and university teams forming at ETU "LETI". Statistic data was collected through a mix of methods; in addition to literature and statistics, the main data was extracted from interviews and feedback surveys with involved persons of the universities.

The purpose of the current research is to explore which impact an innovative framework for organisational and educational change has on the development of LETI policy master's program development.

The relevance of the paper is due to the existing need for the constant development of universities and the reorganization of the existing managerial and teaching activities. The author argues that it is the work with university teachers in close cooperation with university administration is proportional to the speed of the development of the university and the spread of transformational processes. The model developed by the author can be implemented both independently and as a supplement to educational projects and university development programs.

CHAPTER 1. THE CONTEXT OF RUSSIAN SYSTEM OF HE

After the collapse of the Soviet Union, the Russian system of higher education (HE) met the problem of self-orientation and future development. For a very long time, the USSR system of HE was staying unchangeable. It was unique and considered a strategic element of the national economy. Offering a centrally designed curriculum for preparing “one standard Specialist’s degree, the higher education system was not competitive because it simply had no rivals [Smolentseva, Platonova, p. 2-8]. After the collapse of the Soviet Union, all 15 countries started developing in different directions. In new realities, after more than 20 years, universities still continue to develop following different routes. However, starting with 1990-s, the Russian system of higher education had not changed a lot, giving the priority to two familiar formats of teaching: lectures and seminars and promoting well-known model of educational pipeline. Nowadays, the academy realm lives in a mode of permanent changes with a constant feeling of ambiguity. These are characteristics of VUCA¹ - world. And there is no doubt that universities should change with the world.

In our research as the main initiator of university transformations in Russia we consider SKOLKOVO Education Development Centre (SEDeC) which is a part of SKOLKOVO business school. Since 2011 SDEC develops and introduces new approaches and educational management practices in Russia and the world.

Primarily, the audience of SEDeC training is university top managers (rectors, vice-rectors, deans and heads of departments) and research organizations management. According to Bischev [2018], SEDeC uses an innovative method developed by Moscow School of Management SKOLKOVO that helps accelerate university-wide change processes. The author considers the ‘Skolkovo method’ as a powerful tool for university change because of the successful organisational framework realized in a form of ‘strategic sessions’. The strategic sessions bring together around 70-100 key internal stakeholders who are supposed to work in thematic working groups moderated

¹ VUCA is an acronym (artificial word), first used in 1987 and based on the leadership theories of Warren Bennis and Burt Nanus, and stands for Volatility, Uncertainty, Complexity and Ambiguity. It was the response of the US Army War College to the collapse of the USSR in the early 1990s. Suddenly, there was no longer the only enemy, resulting in new ways of seeing and reacting (“VUCA World - LEADERSHIP SKILLS & STRATEGIES” , 2022).

by facilitators, e.g.: ‘student engagement’, ‘research development’ or ‘the new polytechnical school’. After that groups present their findings and ideas in plenary sessions where the intellectual exchange among all the participants happens and the groups return to their projects with new insights and perspectives and refine or adapt their vision and strategies.

The idea of SKOLKOVO sessions was to engage all layers (from faculty to top university managers) in university transformation programs. However, the most popular SKOLKOVO program is a School of rectors which aims at a university goal and strategy formation, providing support in federal and international programs, research and expertise connected with HE. In most cases only the university leaders are nominated by their organisations to participate in such program. Revising and defining particular university features during the trainings, university leaders usually start university reforms without articulating properly university goals and ambitions for a wide actor of educational and organisational processes at the university. As a result, top-down decision-making is often heavy. There is no bottom-up development of a university vision and participation of faculty members and students in it, so both groups do not understand the purpose of university transformation and do not see any need for it. Thus, the university system does not work stable and smoothly – university teachers do not understand the purpose of constant changes and university managers do not know teachers’ problems. There is a need for common sessions or even training that will allow university structures to organize a dialogue and find common solutions.

1.2 MA PROGRAM “EXPERIMENTAL HIGHER EDUCATION”

In 2020 the first master program devoted to bringing up university changers was introduced at School of Advanced Studies, a Siberian institution focused on international and interdisciplinary research. According to Melnyk and Kontowski [2020], Experimentation in higher education must become the norm. In the article of the same name ‘Experimentation in higher education must become the norm’, the authors, designers of master’s program “Experimental Higher Education” (MA X-HE), write about university needs for sustainable changes or university transformation. To “stay in the game” and maintain the uninterrupted flow of teaching and research,

central higher education institutions need to balance stability and innovation. However, to successfully complete this task universities need a new experimental mindset that includes: clear hypothesis, grounded data and theory. This base allows us to break rules without destroying a system.

The MA X-HE program is based on the 5 main principles, which are:

- Real experiments. From the very beginning, students are supposed to conduct experiments on the different level (starting from the lesson and finishing with the institutional change);
- Theoretical background will help students to ground their hypothesis and prove their effectiveness;
- Cohort formation. Graduates of MA X-HE are a part of a professional group that shares the common mission – to make universities better;
- Challenge-based exams. Students' assignments are assigned by a wide range of external experts in different domains of HE;
- Globality. Innovations provided by MA X-HE students are supposed to be applicable not only in Russia, but also to satisfy the international educational market.

The program lasts 2 years. The first year is devoted to intense learning and analysing the theory connected with teaching and learning, experimenting in HE, economics in HE, HE reforms. Also, during the first year, students start experimenting. At the same time, the subject and direction of the experiment is limited only to the vast topic of higher education and students are free to work on different aspects: merchandise, classroom environment, students' engagement, university mission and vision, teaching methods and techniques, etc.

The second year is a full-year internship in the host universities. Students are supposed to come back to their universities or get a job in another university and convert previous experience in a true experiment that can develop any university process.

In this paper, one of the cases of second year MA students' experiments is presented. It was realised at St. Petersburg Electrotechnical University "LETI" (LETI).

1.1 LETI CONTEXT

Saint Petersburg Electrotechnical University “LETI”² was founded in 1886 and was the first higher educational institution in Europe to specialise in electrical engineering. Now it is a multi-building educational organisation that hosts about 10 000 students and takes place in the TOP 21 Russian universities according to university excellence initiative 5 to 100.

The mission of the university is to generate, expand and apply the new knowledge for dynamic development and maintenance of global competitiveness of radio-electronic and info telecommunication systems, taking into consideration predictable global trends in science, techniques, technologies, and structural reforms in economics. The main universities goals are:

- satisfaction of personal needs in intellectual, cultural, and moral development;
- satisfaction of country and society needs in preparing high-qualified professionals in scientific and educational, cultural and administrative fields, who can provide the development of science, technique, and technologies;
- satisfaction of world community needs in new knowledge and technologies.

The first step on the path of transformation, ETU “LETI” made in 2013, becoming a participant in the program of university excellence initiative 5 to 100 project. This project is a state initiative aimed at adapting Russian universities to world standards and integrating them into the international educational environment.

In the end of the program, many Russian and international HE experts consider the project as a failure, but it is not fully true. In the expert report “Route map of the university transformation³” [p. 17] four unsolved issues are presented:

1. It was not possible to solve the problem of rotation of the rector's corps. The idea that this was a temporary position and not a lifetime status was painful and sensitive.

² The last abbreviation is an integral part of the name of the institute now. Previously, it was called the Leningrad Electrotechnical Institute named after Vladimir Ulyanov, widely known as Lenin.

³ Rus. *Маршрутная карта трансформации университета. Экспертный доклад. SKOLKOVO, Сентябрь 2021*

2. It was not possible to solve the problem of financial openness as the standard of financial reporting of the modern world. Only a small group of universities has begun to experiment with this. It also failed to solve the problem of open data.
3. It was not possible to abolish the outdated mechanisms of administration and control in relation to universities, which are ordered to develop.
4. It was not possible to solve the problem of financing advanced institutions within universities - the strategic academic units (StrAU).

And finally, the ambitions of the program to integrate Russian universities in the international academic community. Although no university took a place in the top 100 international universities ranking, the program played an important role in the development of HE in Russia. In the case of ETU “LETI”, the university realised that even a century-long career of educational organisation does not guarantee that it will remain popular and significant in the Russian education market, and even more so in the international arena. This practice was a sort of shake-up and shock therapy that forced the administration to act and develop.

In autumn 2021 the new university excellence initiative “PRIORITY-2030” was launched. The logical extension of the 5 to 100 has extremely new priorities such as refusal of international ratings, not life-long status of the winner, not only research-centred orientation, bigger budget and more autonomy in the processes of university change.

In those realities LETI could not any more use its status and prestige for becoming a leader, the university faced many “young” and ambitious concurrents, and the need for quick reforms became obvious.

1.2 MOTIVATION AND BACKGROUND

To analyse how a student of “Experimental Higher Education” could be useful to the university, foremost, it was necessary to understand the university needs. Based on university needs analysis, shadowing and observation reports made in the first two months of the internship in the department of international affairs, the following problems were identified:

1. Insufficient number of master's degree students;

2. Challenging communication between departments;
3. Insufficient communication between layers (administrators, university teachers);
4. Very limited set of teaching and learning practices and poor level of English language among university teachers;
5. Insufficient cooperation with stakeholders;
6. Lack of cooperation with other universities;
7. Small number of further vocational education (FVE) students.

First of all, let us consider all these dimensions in more detail and explain why they are important for the university. The first point is a small number of master's degree students. It is important to note that this dimension is a strategic priority of LETI, as the university pretends to become the biggest Russian university platform for Research and development (RnD) master programs by 2030. Also, the university claims that by 2027 it will have about 17 000 students and this augmentation will be reached mostly by master students. If we start to elaborate this problem, we understand that it is not a problem, but a result of the next issues presented in the list of problems given above.

The challenging communication between departments and layers within the organization is, probably, the main problem to be solved first. As Olga Nazaikinskaya says in the expert report [Route map of the university transformation, p. 28-29], the ongoing conflict between “administrators” and “academicians” is the main reason for unproductiveness. And these days there is a trend in university management for an optimal model of effective management interaction. Therefore, there is an active search for a way of peaceful coexistence of these different approaches for the benefit of the development of institutions. Among the most relevant solutions: the creation of mixed (administrative-academic) working groups, a transparent KPI system and direct communication of the academic community with the first person.

Poor level of teaching and learning techniques used by university teachers also could be considered as a deduction from the 5th and 6th dimension. Lack of cooperation with business sector results in unchangeable for decades teaching and learning practices. As a result, students get irrelevant knowledge and skills. In order to

understand what we should teach students, universities should know the needs of stakeholders, understand the labour market and know what position their student will take after graduation.

The 7th point can be also connected with the previous dimensions, but, nonetheless, it was important to mark this problem, because it is may be solved simultaneously with other issues if the right approach would be chosen.

To sum up, we can observe the need for university change from both perspectives: organisational and educational. To have new educational products that meet a wide range of requirements, universities need to adapt new formats and methods of curriculum design.

1.3 RESEARCH SUBJECT AND OBJECT

The significance of the work is due to the existing need for the constant development of universities and the reorganization of the existing managerial and teaching activities. Individualization of the project to the needs of St. Petersburg Electrotechnical University “LETI” indicates the need for universities in a private approach to transformation. The subject of the of the research is transformational processes that aimed at improving university's activities, raising the quality of teaching and learning and promoting an effective development of university governance system. The object of the research is a development of an innovative framework for organizational and educational change at ETU LETI. The main objective of the project is the transformation of the master's programs at St. Petersburg Electrotechnical University “LETI” through the organization of a school for university teachers and administrators.

The goal of this study is to develop and implement a university-based formal training for university teachers and university mid-level managers in order to enhance teaching competencies and transform master's programs. This innovation should help the university solve the previously identified problems related to the number of undergraduates, the quality of master's programs, the level of teaching competencies, interaction between administrators and teachers of the university. Our hypothesis is that a new format of the formal university teachers' training, simultaneous training for

both university teachers and mid-level university managers, and a group work format which involves university teams working together on the common project will have a positive impact on the entire organizational processes that will dedicate to better master's programs promotion due to teaching and learning quality improvement and better programs management.

The novelty of the approach lies in the organizational framework, which consists of two independent tracks, as well as joint lectures, workshops and group work, allowing teams to accumulate knowledge gained from two sides (administrative and teaching activities) and develop their own strategy for the development or development of a master's program.

Action research was chosen as the main research method. Action research method was used for investigating how implementing of a new innovative framework for organisational and educational change can influence the master's degree program development and university teams forming at ETU "LETI", taking a proactive position of both researcher and project designer.

The literature used in the study is related to university management and governance in HE [Busch, 2017; Connell, 2019; Strike, 2017; Broucker, Wit and Leisyte, 2015 and others], teaching and learning techniques [Johnson, 2015; Ash and Clayton, 2004; Davis, 2017; Gilyazova, Zamoshchansky, and Vaganova, 2021, etc.], and some normative documents and reports related to higher education area.

1.4 OUTLINE OF THE THESIS

The thesis of an introduction, the main part (two theoretical chapters and one practical chapter), discussion and recommendations, and a conclusion. The work is accompanied by appendices, a table of contents, including 53 scientific papers by Russian and foreign scientists. In order to answer the research question and fulfil the purpose of the study, the further parts of the current thesis have the following sequence and content:

In chapter 2: *Theoretical Framework*, the chosen theoretical model to investigate the research question is explained by a review of different contemporary literature and previous research.

The chapter 3 is devoted to *Technical preconditions for research design*. It explains tools and formal methods that will be used for research design.

The next chapter 4: *Design and Methodology* provides an overview of research approach and justification of methodological choices for all parts of the research project. Also, a detailed introduction to the chosen research field, the actors, and the main findings of the examination of the chosen method are presented in this chapter.

In chapter 5: *Discussion and recommendations* devoted to comparison with the similar program by SKOLKOVO Education Development Centre (SEDEC) and suggestions of the future program improvement and implementation.

The chapter 6: *Conclusion* summarizes main findings from the previous sections and discusses connections with previous research as well as managerial implications and proposals for future research.

When writing the thesis, all the deadlines for completing and submitting the paper were observed, all comments and remarks regarding the study were also taken into account.

To sum up, analysing the current situation in the Higher Education and matching it with the context of Saint Petersburg Electrotechnical University LETI, we found up a solution for several university issues. Having a unique experience of HE gained in frames of the master's program “Experimental Higher Education”, an innovative framework for organisational and educational change was designed by MA X-HE student. The main purpose of the research is to explore which impact an innovative framework for organisational and educational change has on the development of LETI policy master's program development.

CHAPETR 2. THEORETICAL FRAMEWORK

A theoretical framework includes a literature review that helps us to bring the light to several important domains: instructional design, teaching and learning techniques, normative papers and university excellence initiatives, and management in higher education. To meet the requirements to the participants' outcomes, the school program was revised according to Bloom's taxonomy principles. As a theoretical basis, we relied on reports from Russian universities that conducted similar advanced training programs [Batrakova; Glubokova; Pisareva and Tryapitsyna]; as a practical basis, we analysed cases of development and implementation of educational products connected with Instructional design (ID), management, HE development provided by educational organizations and the business sector ("Designing the educational experience"⁴ by School of Education, "KOD"⁵ – Skolkovo, "Profession methodologist from 0 to PRO"⁶ and "Profession Project manager in online education"⁷ – Skillbox, "Team management"⁸ – Yandex.Practicum).

The main theoretical basis for our research from managerial point of view is *New Public Management (NPM) Theory*. This theory is literally constructed on a variety of intellectual roots. Initially, the term New Public Management expresses the idea that the cumulative flow of policy decisions over the past twenty years has amounted to a substantial shift in the governance and management of the "state sector". The first NPM policy practices were implemented by Prime Minister of the United Kingdom Margaret Thatcher to support innovation processes in the country. A term itself was coined in the late 1980s to denote a new (or renewed) focus on the importance of management and "production engineering" in public service delivery, which often linked to doctrines of economic rationalism [Hood, 1995; Pollitt, 2013]. "*Less state*" and "*More market*" are key terms associated with NPM [De Boer et al., p.35]. Common particular features and characteristics of NPM include:

1. Introduction of performance indicators and benchmarking;
2. Priority setting by government and institutions;

⁴ RUS. Проектирование образовательного опыта

⁵ RUS. КОД образовательных программ

⁶ RUS. Профессия методист с 0 до PRO

⁷ RUS. Профессия Руководитель проектов в онлайн образовании

⁸ RUS. Управление командой программа Яндекс.Практикума

3. The assessment of targets and outputs;
4. Strengthening the administrative and leadership functions within universities;
5. Adoption a client orientation;
6. New budget allocation schemes where more influence comes from output than inputs;
7. Diversification of university funding mechanisms;
8. Stimulation of new actors in university management councils and boards, quality control, and research funding agencies;
9. A value-for-money logic, with an increased emphasis on costs and returns. [Capano, 1999; De Boer et al., 2008; Leišyte et al., 2010].

NPM had a great impact not only on the government sector, but on education too. Since the mid-1980s, the notion of New Public Management or New Managerialism has emerged as a key principle penetrating recent shifts in governing modes in higher education in many Organisation for Economic Co-operation and Development OECD countries. To Ziegele [2008] NPM in higher education includes the state management of higher education institutions and the management of decentralized levels within a single institution, e.g., faculties, institutes, central units, by a particular management level. Also, NPM is a shift of management from “government to governance” to be “less government and more governance”. Despite the fact that NPM has successfully been integrated into some educational models, at the moment there is no single solution for the same problems, since this organizational method reserves the right to new innovative solutions and experiments.

To Broucker et al. [2015], for HE researches, the challenge will be to grasp these and similar contemporary developments in HE that are focused on connectedness, integration and networking. This will very likely lead to the construction of a new ideal type steering model, that will exist next to NPM or gradually replace the NPM model. Moreover, an important task for higher education researchers is not only to focus on the analysis of the developments, but also to pay considerable attention to the effects (positive and negative) of future reforms.

In our research, New Public Management model would allow us to experiment with a format of framework, introduce innovative solutions and challenge them during

the implementation period. Since this method does not require long-term preparation, but, on the contrary, is aimed at optimizing and quickly solving the tasks set, we can observe the instant effect of our actions. And promptly make changes and adjustments.

Concerning teaching and learning approach we base our research on instructional design theory with the main focus on *Revised Bloom's Taxonomy* theory.

We can define an instructional system as an arrangement of resources and procedures used to promote learning [Gagne, Briggs, p. 20]. Instructional system can include variety of particular forms of instructions based on different methods from teaching and learning, business and industrial sectors. Gagne, Briggs claim that Instructional systems design is the systematic process of planning instructional systems, and instructional development is the process of implementing the plans [p.20]. The combination of two these functions is referred to a broader term – instructional technology. It can be defined as systematic application of theory and other organised knowledge to the task of instructional design and development [Gagne, Briggs, p. 20]. Implementing our framework, we set a goal to make the formal training of university teachers and managers an ongoing process. That is why it is important to understand principles of human learning.

According to Gagne and Briggs [1974], a model of information processing that identifies a number of internal processes underlies contemporary theories of learning. These processes bring about several successive stages in the transformation of information on its way to storage in the long-term memory. The purpose of instruction is to arrange external events that support these internal learning processes. An act of learning is greatly influenced by previously learned material retrieved from the learner's memory [Gagne, Briggs, p. 18].

The learning processes in frames of our innovative framework would be mostly designed according to Revised Bloom's Taxonomy (RBT) principles. The initial Bloom's Taxonomy [1956] considers a multi-tiered model of classifying thinking to 6 cognitive levels of complexity: knowledge, comprehension, application, analysis, synthesis and evaluation. During the 1990's a new interpretation of Bloom's taxonomy was elaborated by Bloom's former student Lorin Anderson with a group of cognitive

psychologists. Some terms were renamed, some changed the initial positions, and all of them were changed from nouns to verbs (figure1).

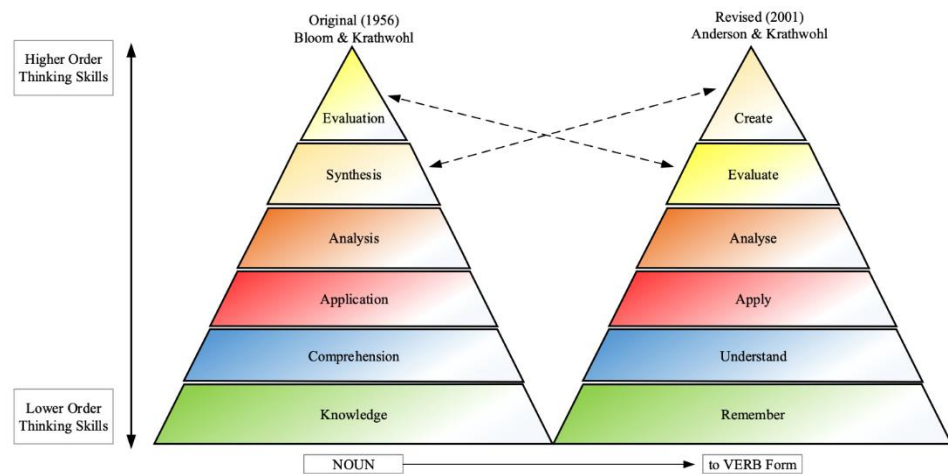


Fig. 1. Revised Bloom's Taxonomy

According to Anderson and Krathwohl [2001], new terms can be defined as:

- Remembering: Retrieving, Recognizing and recalling relevant knowledge from long-term memory.
- Understanding: Constructing meaning from oral, written and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing and explaining.
- Applying: Carrying out or using a procedure through executing, or implementing.
- Analysing: Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.
- Evaluating: Making judgements based on criteria and standards through checking and critiquing.
- Creating: Putting element together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.

In our innovative framework we follow the most common bottom-up principle, starting with the first levels. These levels are: remember, understand and apply we will quickly go through lectures, expert reports, workshops. For achieving the high higher order thinking skills, we needed to place the participants in the situation when they have to analyse, evaluate and create. The first step to analytical experience was already given at the stage of filing an application for participating at school. We asked participants to conduct research toward their master programs from different perspectives (target audience, potential concurrent, benchmarks, market change and new positions, new requirements and opportunities for alumni). The evaluation skills should be acquainted during the plenary sessions and peer projects assessments. The creative skills are synthesized previously acquainted knowledge and competences that can be implemented during group work sessions when participants are supposed to create their own educational products.

To sum up, the theoretical framework includes two aspects: managerial side that is primarily focused on organizational skills and methods for designing a framework, and instructional design that is aimed at effective content filing for university teachers and managers' training.

CHAPTER 3. TECHNICAL PRECONDITIONS FOR RESEARCH DESIGN

To start designing a framework for organisational and educational change at the university we elaborated a few practical tools: as an evaluation method, SWOT analysis was preferable. For general description of the framework, we used *A Systems Approach Model for Designing Instruction* [Dick and Carey, 1990]. Teaching and Learning Methods are presented in *Aspects of learning* subchapter and includes essential approaches that can be used to achieve concrete skills and competences (graduate attributes) required from the graduate.

3.1 SWOT ANALYSIS

SWOT analysis standing for Strengths, Weaknesses, Opportunities and Threats. This tool is widely used in different sectors for the evaluation of company's current situation. It makes it possible for the organisation to understand the internal strengths and weakness, as well as their external opportunities and threats [Griffin, 2007] (Figure 3.1). An encyclopedia of strategic management [Channon, 1997] calls it a simple but powerful tool for evaluating the strategic position of a firm.

	Strengths	Weaknesses
Internal	Internal capabilities which may help the company to reach its objectives	Internal limitations that may interfere with the company's ability to achieve its objectives
	Opportunities	Threats
External	External factors that the company may exploit to its advantages	Current and emerging external factors that may challenge the company's performance
	Positive	Negative

Fig. 2. SWOT analysis structure (Kotler & Armstrong, 2012)

According to Schall [2014], SWOT analysis is an analytical tool of the internal and external audit that can help us structure basic information on projects, organizations and institutions. The author lists the following advantages of the SWOT analysis:

- The method makes it easier to get a common understanding of the real situation among different working areas within one organization or between organizations and their clients, suppliers, peer groups, shareholders or management;
- The method makes it possible to justify strategic options;
- The method is a most objective and prosperous way to define how capable a company or organization is, where this is needed to survive threats and enable opportunities;
- The method finds usage in an organization, such as an NGO (non-government organization), governmental department or private firm where the participants are employees.

Nevertheless, Schall [2014] highlights that SWOT analysis has some limitations too. They are presented below:

- SWOT can be characterized as a subjective analysis because of general description of the real context. In many cases the results of SWOT, analysis depend on the depth of the researcher's reasoning and his knowledge of the strategy and situation in the industry;
- The process of the method is often connected with a lack of communication, discussion and verification of all external and internal factors;
- Referring to the preceding point, to the strategy generation process, SWOT outcomes prove a less credible input than they are capable of being;
- The strategy generation process will sometimes use the results of the method. If the people involved know about this, the quality of their inputs will most likely suffer and be lower than otherwise possible, and desirable;
- The method can be a reason of what is considered an excessive formalization of the strategy making process;
- The required accuracy of strategic analysis cannot be ensured by a simple method such as SWOT;
- SWOT elements are rarely adapted for alternative strategy options.

SWOT analysis have been criticised as a conventional tool in strategic planning. Kotler claim that [2009] “SWOTs are essentially descriptions of conditions while strategies define actions”. Moreover, findings can be presented uncritically, so that

weak opportunities may balance strong threats. Thus, SWOT should be used with caution and as a basic tool. [Kotler, 2009].

3.2 A SYSTEMS APPROACH MODEL FOR DESIGNING INSTRUCTION

Whereas traditional classroom instruction depends solely on the abilities of an individual classroom instructor, modern instruction allow us to consider the learning process as a set of complex processes. *“It is an interrelated system of parallel components – the learning environment, the students, the materials, and the teacher – working towards a common purpose”* [Matthew, 2000].

To be more productive in a very limited period and have the opportunity to operate effectively, making contributions of each step of the project, A Systems Approach Model for Designing Instruction by Dick and Carey [1990] was chosen. This model was preferable because of a clear and transparent procedure where each component must be determined, assessed and revised for greater overall effectiveness. Such approach let us develop the initial framework in case of its successful implementation and support its sustainable development.

The Dick and Carey’s [1990] model consists of nine steps which are based on analysis, design development, implementation and evaluation of the instruction. They are:

Step 1. Instructional Goal; According to Gagne and Briggs [Principles of instructional design, p. 21], the goals should be determined quite specifically before systematic instruction can be designed to attain them. The important thing here is to recognize which goals are instructional goals and which are not. The authors claim that it is especially true for industrial or vocational instructional courses, so at this level the instructional designer should define what goals can lead to desirable state of affairs. Also, at this stage the authors propose to conduct a university need analysis to compare desired and present states of affairs.

Step 2. Instructional Analysis; This step can be simultaneously be conducted with the Step 3. The purpose of this stage is to define which skills should be involved in reaching a goal process. The product of this analysis is a list of the steps and the skills used at each step in the procedure.

Step 3. Entry Behaviours and Learner Characteristics; As previously it was mentioned this step is usually conducted in parallel with the step 2. The purpose of this step is to determine a current learner's position in the educational process. Some learners may know more than others, so the designer must choose where to start the instruction, knowing that it will be redundant. Also, it will be useful to know personal learners' traits, as it can help to define learning capability that may need to be considered in instructional design [Gagne, Briggs, p. 25].

Step 4. Performance Objectives; Performance objectives are statements of observable, measurable behaviours or intimate relationships between objectives, instruction and evaluation. There are 4 functions of Performance objectives, which are: 1) providing a means for determining whether the instruction relates to the accomplishment of goals; 2) providing a means for focusing the lesson planning upon appropriate conditions of learning; 3) development of measures of learner performance; 4) learners assistance in their study efforts [Gagne, Briggs, p. 26].

Step 5. Criterion-Referenced Test Items; The purpose of this design stage is to detect whether the learner has acquired the desired skill/knowledge. The performance evaluation methods depend on the instructional designer. According to his/her strategy of achieving instructional goals, the instructor can choose formative, summative or continuous evaluation.

Step 6. Instructional Strategy; By instructional strategy Gagne and Briggs mean a plan for assisting the learners with their study efforts for each performance objective [Gagne, Briggs, p. 27-28].

Step 7. Instructional Materials; Talking about instructional materials we mean printed or other media intended to convey events of instruction. More usual teachers do not have a lot of autonomy selecting or preparing instructional materials, more often it is imposed. However, for better learning outcomes, a teacher should know how to organize a learning process effectively and which scaffoldings (instructional material) use.

Step 8. Formative Evaluation; The purpose of the formative evaluation is to revise the instruction so as to make it as effective as possible for the largest number of students.

Step 9. Summative Evaluation. Studies of the effectiveness of the system as whole can be called summative evaluation.

This model serves as the basis for this study. In the process of instructional design, The Dick and Carey's [1990] model is subject to some changes in the type of generalization.

3.3 ASPECTS OF LEARNING

This subchapter is devoted to different teaching and learning methods that were used in frames of project implementation stage. The choice of specific methods is determined by the analysis of graduate attributes that a modern graduate should have.

Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem. This problem is what drives the motivation and the learning. According to Duch [2001], Problem-Based Learning is a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts. In addition to course content, the use of this method can promote the development of critical thinking skills, problem-solving abilities, and communication skills. It can also provide opportunities for the development of such skills and competences as life-long learning, project management, working in groups, finding and evaluating research materials, analytical thinking, public speech and presentation.

According to Nilson [p. 189-190], a well-designed PBL project provides students with the opportunity to develop skills related to: working in teams, managing projects and holding leadership roles, oral and written communication, self-awareness and evaluation of group processes, working independently, critical thinking and analysis, explaining concepts, self-directed learning, applying course content to real-world examples, researching and information literacy, problem-solving across disciplines.

Rather than teaching relevant material and subsequently having students apply the knowledge to solve problems, the problem is presented first. PBL assignments can be short, or they can be more involved and take a whole semester. PBL is often group-oriented, so it is beneficial to set aside classroom time to prepare students to work in groups and to allow them to engage in their PBL project. Students generally must:

- examine and define the problem;
- explore what they already know about underlying issues related to it;
- determine what they need to learn and where they can acquire the information and tools necessary to solve the problem;
- evaluate possible ways to solve the problem;
- solve the problem.

Nowadays, PBL is a new educational trend in Russian HE. Many Russian universities claim that they are using this method in the teaching and learning processes. However, there is no one common PBL model, as each organisation understands it in one's own way. Moreover, there are institutions where problem-based learning is taught as project-based learning, though they are absolutely different things.

Project-based learning (PjBL) is a model that organizes learning around the project [Thomas, p.1]. Project-based learning or project-based instruction is an instructional approach designed to give students the opportunity to develop a wide range of knowledge and skills through engaging projects set around challenges and problems they may face in the real world.

It is important to mention that in Russian HE context this method is often confused with PBL because of the same acronym PBL that can be applied for both. This is a popular mistake of many Russian universities that claim to use PBL, implying project-based learning but realizing, in fact, a simple version of project-based learning. Understanding of principles of both PBL and PjBL is crucial because these methods are becoming an integral part of any master's program.

However, project-based learning is more than just “doing a project”. According to Goodman and Stivers [Project-based learning. Educational psychology, p.2], during the project-based learning classes students go through different types of activities that reflect the types of learning and work people do in the everyday world outside the

classroom. Due to this format, students are likely to improve and develop the following important skills:

- communication and presentation skills;
- organization and time management skills;
- research and inquiry skills;
- self-assessment and reflection skills;
- group participation and leadership skills;
- and critical thinking [Goodman, Stivers, p.2].

According to Thomas [Thomas, p.8], research on Project-Based Learning can take several forms. They can:

- be undertaken in order to make judgments about the effectiveness of PBL (summative evaluation);
- assess or describe the degree of success associated with implementation or enactment of Project-Based Learning (formative evaluation);
- assess the role of student characteristic factors in PBL effectiveness or appropriateness (aptitude-treatment interactions);
- test some proposed feature or modification of Project-Based Learning (intervention research).

Generally, PjBL is considered as a group work where students work on the common goal. This method is very flexible in terms of assessment that allow teacher to choose any form of assessment: group or individual, continuous, summative or formative.

Based on the study provided by Guo, Saab, Post, and Admiraal [A review of project-based learning in higher education: Student outcomes and measures, p.3-5], we can define four categories (cognitive, affective, behavioural outcomes and artifact performance) and seven sub-categories (knowledge, cognitive strategies, perceptions of the benefits of PjBL, perceptions of the experience of PjBL, skills, engagement, artifact performance) of student learning outcomes using PjBL in HE.

Thus, comparing PjBL with PBL we can mention the following differences:

1. During the PjBL students work on an open-ended assignment that can conclude several problems, while working in PBL technique, students should come up with an authentic question.
2. University teacher's guidance is not required in PjBL, it is enough to give students a good instruction, and in PBL practices university teacher plays a role of a guide or coach, being able to provide a support, empathy and inspiration, facilitate thinking.
3. For realising a PjBL students do not need additional data to answer the question, they can operate with previous knowledge, and PBL sessions suppose additional data research as students are not limited by instructional frames and can develop their thoughts in any direction.
4. Also, in PjBL students have to produce an artefact to demonstrate their mastery of content, in Problem-Based Learning, students have to present a solution to a clearly defined authentic problem.

We cannot conclude which method is better, as it depends on educational goals. In our instructional design we included both PBL and PjBL to make a detailed comparison of the two methods in university teacher's practices.

In educational psychology, a learning artifact (or educational artifact) is an object created by students during the course of instruction. This modern approach to artifact-based learning has found its application in today's popular forms of students' accelerators – start-ups. However, the original form of this method was called learning-by-doing techniques or learning-by-designing [Lester, FitzGerald, Stone, p.155-158]. Although, artifact-based learning is becoming more and more popular, it is guided by Social Constructionism (SC). SC focuses on learning through making and emphasizes individual learners' interactions with their artifacts [Parmaxi, Zaphiris, Michailidou, p.557-559]. Papert [1993] summarized constructionism in his belief that learning occurs more effectively when learners experience active construction of public and visible artifacts. This artifact should be shared and visible to the world, either *“a sand castle on the beach or a theory of the universe”*.

Social Constructionism emphasizing the importance of social interactions and materials for the construction of an artifact. Social Constructionism (SC) offers a fertile

ground for grounding the use of social technologies to organize activities in which groups of learners are involved for collaborative construction of shareable artifacts [Parmaxi, Zaphiris, Michailidou, p. 565-566]. Artifact-based learning is focused on placing emphasis in social interactions and materials offered within social technologies. Based on the results of a three-year design-based research (DBR) study by Parmaxiet al., [Enacting artifact-based activities for social technologies in language learning using a design-based research approach, 2016], knowledge is better gained when students find this knowledge for themselves while engaging in the making of concrete and public artifacts.

Artifact-based learning contributes to:

- independent work of students. Students take the first step towards their project on their own, resorting to independent study of literature or relying on their instinct;
- individualization of education. Since students use different approaches to the implementation of the project, have different experience and speed of mastering new knowledge and skills, the teacher builds the work process in such a way as to satisfy the needs of each individual student;
- reduce the fear of making mistakes. Since the work on the artifact consists of step-by-step work on the project, the student does not feel the fear of making a mistake. This approach enhances innovative and creative thinking.

Collaborative Online International Learning (COIL) is an innovative approach to teaching and learning, which provides academics and students with the ability to communicate and collaborate with peers internationally through online [Rubin, 2015]. Using Internet-based tools and innovative online pedagogies, COIL fosters meaningful exchanges between academics and students with peers in geographically distant locations and from different lingua cultural backgrounds [Guth, 2013]. While connecting two classes from different parts of the world is didactically and administratively ambitious, COIL provides additional learning experiences where students can interact, collaborate, and take ownership of their learning, extending opportunities for intercultural and transnational learning.

The main learning outcomes that can be achieved through COIL classes are:

- digital skills (computer literacy, web-based communication and research, word processing, email and chat, secure information processing);
- language skills and cross-cultural communication;
- group work skills and leadership competences.

Articulated learning (AL) is an educational process in which the learner analyses information through reflection on his/her experience. “A continual interweaving of think” that is how Schön [Schön, p. 281] called reflection. Rogers [Rogers, p.41] managed to combine many definitions of the concept of reflection, and defined it as a process that allows the learner to “*integrate the understanding gained into one’s experience in order to enable better choices or actions in the future as well as enhance one’s overall effectiveness*”. Also, the author highlighted that it could be difficult to implement such method in practice for a teacher, however, it is worth it as the method provides a positive effect on the potential student’s learning outcomes.

According to Ash and Clayton [p.142], there are four guiding questions that contribute in entire processes of Articulated Learning:

1. What did I learn?
2. How, specifically, did I learn it?
3. Why does this learning matter, or why it is significant?
4. In what ways will I use this learning; or what goals should I set in accordance with what I have learned in order to improve myself, the quality of my learning, or my future experiences/service?

Among different students learning outcomes we primarily will name reflection that contribute to social and emotional learning (SEL), self-directed learning and service-learning as well. Also, we can list:

- Self-guidance and self-determination;
- Emotional intelligence;
- Planning and designing skills;
- Peer assessment and empathy;
- Critical thinking and objectivity.

Self-directed learning (or learning by oneself) in its largest sense refers to individuals ability to taking initiative to identify their own learning needs, their ability

to determine their learning goals, their ability to define the sources they need in order to learn, their ability to choose/use appropriate learning strategies and evaluate learning outcomes with or without help from an outsider [Knowles, 1975 as cited in Tekkol, & Demirel, 2018].

Self-directed learning is a process where individuals take primary charge of planning, continuing and evaluating their learning experiences [Merriam et al., 2007 as cited in Tekkol, & Demirel, 2018]. In self-directed learning, the responsibility to learn shifts from a teacher to the individual. That is why it is important to pay special attention to control and active involvement and motivation of the learner in the learning process. Self-directed learning includes the conceptualization, design, implementation and evaluation of learning guided by learners.

It may be referred to as a method of organizing learning in which learners control the task of learning. In addition to these, self-directed learning may also be viewed as a target that learners strive to achieve. In order to achieve it, individuals take responsibility for their own learning and embrace individual autonomy and preferences. Self-directed learners can be characterised by:

- Setting clear goals for themselves;
- Shaping their learning process in line with goals and plans;
- Monitoring of the learning process;
- Evaluation of the outcomes of their own learning;
- Being autonomous, self-motivated and self-controlled;
- Being curious and open to learning;
- Taking initiative to learn [Knowles, 1975; Knowles, 1977; Jennett, 1992 cited in Brockett and Hiemstra, 1991 as cited in Tekkol, & Demirel, 2018].

The advantage of this approach is that the learner becomes an active participant of learning process and a designer of his/her learning experience. It contributes to individual self-development in self-confidence, autonomy, motivation and lifelong learning skills. However, to achieve significant results, learners should meet some competencies that self-directed learning requires. Knowles [1977] lists them as follows:

- The ability to enter into a close, respectful and learning-friendly relationship with learners;
- The ability to establish an environment which is physically and psychologically comfortable, open to interaction, based on cooperation, open and secure;
- The ability to take responsibility for determining one's own learning needs;
- The ability to set goals, to plan, implement and evaluate learning activities;
- The ability to help learners to self-direct their learning;
- The ability to be a facilitator and a source;
- The ability to effectively use small group processes;
- The ability to evaluate learning processes and outcomes [Knowles, 1977 as cited in Kasworm, 1983].

Agile methods came from the IT sphere and were successfully implemented in Education. According to Beck [2001], Agile is one of the most used process frameworks for software development with the aim at lightening the traditional and linear waterfall approach to face the real world in which requirements and solutions evolve continuously (Figure 2). Unlike the waterfall agile completes many small projects, while Waterfall is focused on the single project. Agile introduces a product mindset with a focus on customer satisfaction, and Waterfall focuses on successful project delivery. Agile is more flexible approach to project work that satisfy current market request to be customer-oriented and produce useful products and services.

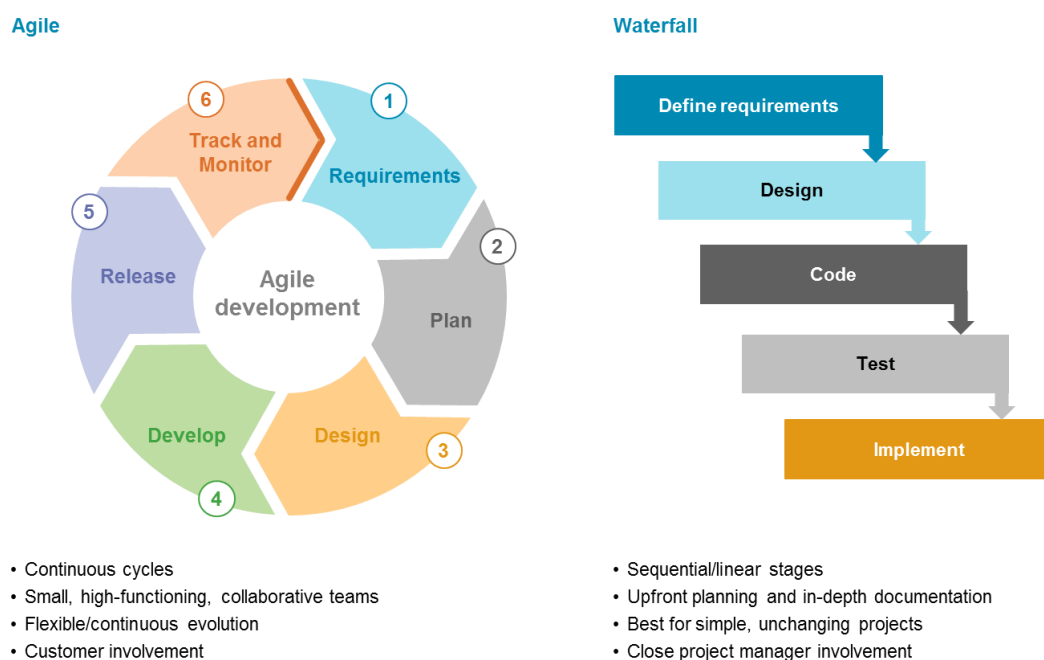


Fig. 3. Agile vs Waterfall

Agile places more emphasis on people factors, focusing on the talents and skills of individuals. If people on a project are good enough, they can take part in requirements change, operate without a dedicated project manager and distribute responsibilities by their own.

Agile makes people work together with excellent communication and interaction, using their individual talents in teams to reach common goals efficiently [Cockburn & Highsmith, 2001]. Agile favours an iterative and team-based approach, attempting to reduce the waste of resources, development time and effort.

This method is actively used by the largest Russian companies such as Gazprom, Rosatom, Yandex etc. Understanding the basic principles of this method will be useful for both university teachers and students. By organizing project activities according to the Agile principles, the teacher has the opportunity to compare the effectiveness of the instruction with other approaches, while students gain valuable experience in working in a team according to the framework followed by the largest actors in the Russian market.

3.4 CLASSROOM MANAGEMENT

Also, we would like to highlight the idea about the educational space and how to use it with more learning outcomes. Jonathan Ryan Davis [2017] says about the importance of classroom management in teacher preparation programs. According to Wang et al. [1993], classroom management is one of the largest factors in student learning and even more important than metacognitive and cognitive processes, parental and teacher support. However, this method is not included in a formal program of teacher preparation or is not covered enough [Jones, 2006; Stough, 2006]. According to Jim Scrivener [2012], Classroom management includes the following components:

1. ***The classroom***: the space organization and classroom layouts, effective seating arrangements for different teaching goals, a variety of teacher's positions, use of classroom space, and general improvement of the classroom environment;
2. ***The teacher and learners*** are independent actors in the educational process. The main argument in these initial chapters is that classrooms are as much a social

context as any other “real-world” context because opinions, feelings, emotions, and concerns all exist in classrooms just as they occur in the real world;

3. **Key teacher interventions** that focus on fourteen key types of intervention. The author introduces thought-provoking suggestions, e.g., “*recognizing the times in class when the teacher’s absence may be more valuable than their presence*” (176), or a metacognitive technique that is signposting, i.e., “*helping students to understand teacher’s methodology by signposting the what and why of the class methodology*”;
4. **Facilitating interaction** covers different dimensions of interaction, including researching interaction and planning how to improve it, e.g., interactions might manifest in quantitative, directional, and qualitative features which the teacher might want to apply depending on the teaching context. This stage consists of a wide range of practical tips on making pairs and groups; group activities such as “Art gallery”, “Carousel”, or “Pyramid discussion” are bound to increase participation and diversify the learning process. Most importantly, the author highlights the need to translate to students the value of group work;
5. **Establishing and maintaining appropriate behaviour** most convenient for those teachers who work with school children at secondary age. However, specific examples presented in this chapter can be applied at the university level, especially for language teachers;
6. **Lessons:** lesson stages, in addition to guiding with lesson planning, the discussion examines the role of the textbook, board work, and reflection in the classroom.

The idea of introducing classroom management into the WES school program is to make university teachers and administrators rethink the educational space. Within the framework of communication sessions and plenary sessions, we will try to draw up some requirements for the organization of the academic space, which is associated with the motivation and comfort of students, the interaction between university teachers and students, and the possibility of using additional resources.

4.1 RESEARCH STRATEGY

The study for this thesis was conducted as an Action Research. According to Salkind [2010, p. 4], it is inquiry that aims at social change where members of the study sample take proactive positions. In our action research we try to operate from both positions of researcher and study participant. Being an active part of the research, we could observe organisational processes from the inside and influence the course of events. Most often, action research is viewed as a process of linking theory and practice in which scholar- practitioners explore a social situation by posing a question, collecting data, and testing a hypothesis through several cycles of action [Salkind, p. 4].

In the center of action research is reflection that can be proceed through various types of reflection, including those that focus on learning for practice, learning in practice, and learning from practice. According to Salkind [2010, p. 5], reflection is integral to the habits of thinking inherent in scientific explorations that trigger explicit action for change. Iterancy and cooperation are also important in action research strategy. Thus, the chosen research strategy allowed us to organize our framework in cyclical and continuous way. In case the project is successful, we could develop it through spiralling activities of hypothesizing, planning, fact-finding, execution, and reflection.

The researcher was working in the chosen organization. A goal of this thesis was to explore which impact an innovative framework for organisational and educational changes have on the development of LETI policy master's program development.

The research was conducted as a 4-month project beginning in November 2021; firstly, the research was scheduled, and a detailed research project plan was developed, then team members were chosen, and, finally, the project was realized, and the research data was analysed and presented in the thesis. The author of the thesis was assigned to act as a project administrator whose responsibilities included planning the project, organizing team members meetings, coordinating with team members frequently for updates regarding the work in progress, monitoring the progress of the project and acknowledging team suggestions, preparing and reporting presentations.

4.2 PROJECT DESIGN

Based on matching the ambitions of the university with the missing elements needed to realize them, we concluded that a complex solution was needed. As an idea a project-based activity was preferable, so it was decided to create an innovative framework for organisational and educational change at ETU “LETI” in forms of a school on the university basis. The school should be focused on MA programs. It was offered to focus on designing new or transforming existing master programs at ETU LETI. During the stage of the project design, we use the acronym WES (World Educators’ School) or WES-school as a work name of the project. Lately, it was decided to use the initial title for the project start-up stage.

To evaluate university competitive position and develop strategic planning, SWOT analysis was conducted (table 1).

Table 3.1

SWOT analysis

Strengths	Weaknesses
Big number of participants	Holidays time
School at the university basis	Financial support
Holidays time (no students at the university)	Low students' engagement
Further vocational education	Low level of participants preparedness
Threats	Opportunities
Covid-19	Spin-off projects: teaching and learning centre, network master programs, commercialisation of the school
Lack of experts/moderators/industrial partners	Training of specialists
Groups overload	Experience in project sessions
Participant resistance	Team-building
	New role of students at the university

Strengths

The potential project realization is mostly eased by the dates of the school. Holidays time gives us the opportunity to attract more participants and work in different locations, using different forms of interaction. Also, organising this school, we can cover formal indicator of FVE. Although, there is a system of effective contracts at the university, according to CEO of continuous education, university teachers are not motivated to attend additional classes.

Weaknesses

The first weak point is connected with the dates of potential project implementation. If holiday time is perfect from the organizer's point of view, it is a time for rest for university teachers. To prevent possible troubles associated with negative reinforcement, we agreed on the optional participation. To exclude the possibility of low level of participants' preparedness, we will introduce a selection on a competition basis. To apply to the school, candidates should prepare a presentation concerning an educational program that is supposed to be transformed/created. The presentation should include: program description, analysis of the educational market, benefits, partners and requirements for students/university/teachers.

Threats

The government of St. Petersburg may impose Covid-19 restrictions that could lead to a limit on the number of participants or the complete cancellation of public events. The project timeline is quite intense, and it is completed by the fact that all highly-qualified experts and moderators usually plan their activities for months in advance. So, we need to be ready for rejects and continue to act promptly.

Opportunities

The successful launch and implementation of the project can contribute to the development of the university at the internal and external levels. In the internal circuit, the university is able not only to improve the quality of individual programs, but also to think about the cyclical nature of the school or the organization of a new structural unit – teaching and learning centre/centre of competences. At the external level, you can: 1) think about the commercialization of the project, since at the moment there are not so many programs with similar goals and objectives, and there are no organizational

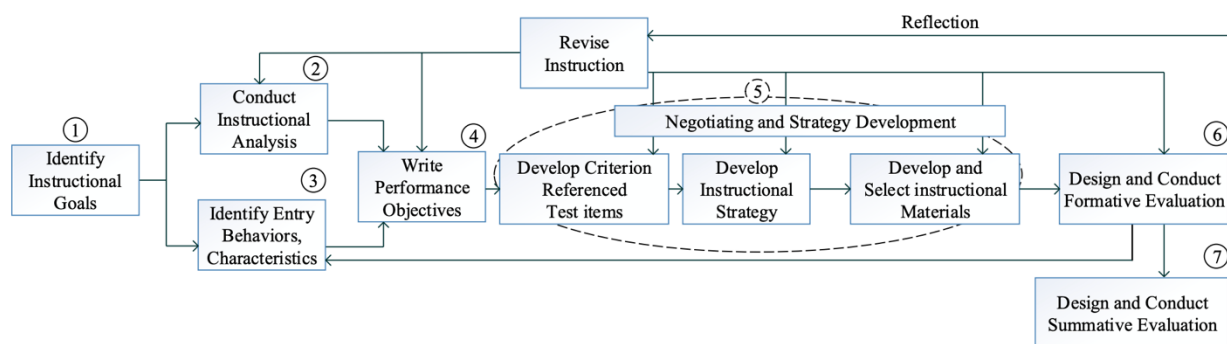
analogues at all; 2) find new partners. Moreover, the partnership may include not only universities but the business sector or industry representatives.

4.3 INSTRUCTIONAL DESIGN

While designing a structure for the school, we used principles of instructional design. According to Gagne R. M., Briggs L. J [1974], instructional design 1) must be aimed at aiding the learning of the individual; 2) combining both immediate and long-range phases; 3) should affect individual human development ;4) should be conducted by means of a systems approach; 5) must be based in knowledge of how human beings learn.

As a template of a model that had become a base to start designing a framework, the Dick and Carey's [1990] model was chosen. It can be generalised in three main functions: 1) identifying the outcomes of the instruction; 2) developing the instruction, and 3) evaluating the effectiveness of instruction.

Using *A Systems Approach Model for Designing Instruction* (by Dick and Carey), we came up with the following scheme (scheme 4.1).



Scheme 4.1 Scheme for model for designing WES instruction

The first step includes goal setting. According to Gagne R. M., Briggs L. J [1974] “after the goals have been stated, the designer may conduct a need analysis”. Also, the authors say that “training needs in business or industry may be derived from a job analysis or from data on the productivity of a particular department”. This principle will be used in our scheme twice: to have a justification that we need to change our

MA programs and to get grounding that these training should be established on a permanent basis. The second step is supposed to list some skills involved in reaching a goal. In parallel with step 2, we have step 3. On this stage, we have to understand our target audience. On the 4th stage “Performance objectives” we design a plan according to our needs and goals. At this stage, we elaborate a draft of our school schedule. The 5th stage is a mix of initial steps 5, 6, and 7. This change was made to generalise the processes as we plan not a course or lesson that let us elaborate our instruction on the micro levels, but organise a complex event with different actors and topics. So, stage 5 is devoted to negotiating and strategy development. The purpose of the 6th step is to conduct a Formative Evaluation. Right after that, the authors propose to design and conduct a Summative Evaluation and Revise instruction on each step. In this step, we decided to include a reflection with feedback submission.

Let us consider each step in more detail.

Step 1. *Instructional goals.* We start designing our framework with defining the aim of the school, its principles and particular features and structure. The LETI school is aimed at designing new or transforming existing MA programs at LETI, introducing trendy methods and techniques and forming university teams responsible for these programs’ sustainable development. Need analysis was based on the interviews with top university administration (vice-rector for international affairs, vice-rector for education and vice-rector for further vocational education), examination of university application form for the current university excellence initiative “PRIORITY-2030” and university web page. It let us understand short and long-term university goals. The long-term goal of the university is to become a platform for RnD programs and raise the number of undergraduates to 17 000 students by 2027. It includes international program extension and development of teachers' competences and skills. At the same time, it is important to train university mid-level managers who play the role of mediators, running the programs and being responsible for the quality. That is why in a short-term period, university focuses on upgrading masters’ degree programs and run new ones. The university administration highlights that they cannot create good MA programs once, it is very important to change them on timely basis, improve and adapt new practices. That is why we need good program administrators who can broadcast

the need for change. Also, we need highly qualified university teachers who can quickly adapt teaching and learning practices for new topics and be sensitive to any students' change in educational needs.

Step 2. *Instructional analysis*. At this stage, we are supposed to list skills and competencies that are required from graduates, and those that we require to our university teachers for effective teaching and learning processes too. Here, we pay attention to two moments: we will try to match university positioning (goals and ambitions) and weaknesses in SWOT analysis concerning university teachers and mid-level managers. As a target reference point of national priorities, we will analyse the following documents: President's message to the Federal Assembly [from 21.04.21], analytical report of Education Development Centre Skolkovo "Route map of the university transformation", and Decree of the Government of the Russian Federation on the implementation of university excellence initiative "PRIORITY-2030".

The President of Russian Federation, Vladimir Putin, in his message claim that 2021 is devoted to science and technology. During the speech, the President mentioned global challenges as Coronavirus, climate change, energy development, including new solutions in the field of nuclear generation in such promising areas as hydrogen energy and energy storage. The mission of solving these problems was entrusted to Russian universities, that means that we should revise graduate attributes and adapt them for new fast-changing reality.

Analysing the "PRIORITY-2030" objectives, we can dedicate the following competencies that Russian universities will teach students:

- digital literacy;
- international cooperation;
- professional competencies.

According to Dara Melnyk [Route map of the university transformation, p. 60-63], there is no common portrait of the graduate, that is why all universities should design their programs relying on market requirements, global agenda and taking into consideration university priorities, potential and students' role in the educational process. One of the participants of the university excellence initiative 5-100 program

ITMO university derived the formula of their graduates which is V F PS. Where V is Values, F – Fundamental thinking, PS –Professional Skills, SS – Soft Skills.

A 25-years research provided by Yorke and Harvey [Graduate Attributes and Their Development, p.42-44] has shown a remarkable level of agreement between different employers of varied fields toward skills and competences required from the graduates. In addition to theoretical and practical knowledge related to the immediate field of activity, employers have always wanted a raft of other personal skills as adaptability, flexibility, and willingness to learn and continue learning. These qualities are crucial both for employer and for newly minted employee, who should be able to quickly adapt to and respond to rapid world change.

Also, the author highlights a less indulgent attitude toward the graduates. They should be self-disciplined, turned into organisational policy and culture, be able effectively with a wide range of other people [Yorke, Harvey, p.42-43]. The trend to work in teams is also reflected in the requirements for the graduate, for example, communication skills, ability to work in a team, persuade colleagues, lead them and to work in several overlapping teams simultaneously. Some bureaucratic skills as writing in a variety of formats (producing formal reports, bullet-pointed summaries, and effective e-mails, for example) and follow the corporate requirements. Being able to engage with clients, network within and outside the organization, being able to take different roles according to circumstances are also appreciated by the employers. Also, it would be a good complement to have such competences as: time management and prioritizing of work, emotional intelligence (appreciating the perspectives and concerns of others, understanding how to interact effectively in numerous settings, and being tactful and forceful when required), problem-solving and creative problem-solving skills.

Among Russian recent studies devoted to effective criteria for assessing the quality of training of future specialists and the adequacy of their readiness to solve real problems of the future speciality, we can list the following skills and competences (cognitive, realisation, social, emotional) required:

- creative, innovative and critical thinking;

- problem-solving skills (problem detection, analysis and detection of opportunities);
- effective cooperation and communication;
- public speaking and presentation;
- proactive position toward the learning processes and learning skills;
- information skills (search and processing of necessary information from various sources, including specialized databases; the ability to use information technology and to ensure the security of information; skills of presentation of research results in the form of articles, reports)
- awareness of global agenda and social intellect;
- self-reflection and responsibility;
- self-awareness and self-efficacy;
- ethical and sustainable thinking;
- financial and economic literacy;
- decision-making skills;
- interpersonal skills;
- interdisciplinary coordination;
- foreign language professional competence (oral and written forms);
- personal attributes (emotional intelligence, integrity, optimism, positive thinking, flexibility, creativity, motivation, empathy) [Gilyazova et al., p. 242-244, Tulkinovna, p.639-640, Voevodina, p. 387 -388, Pesha et al., p. 4-7].

Step 3. *Entire Behaviour's characteristics*. It would be fair to admit that there is no one general portrait of our school participants. First of all, we include 2 groups of university actors: university teachers and university mid-level managers, whose perception of each other's activities are the opposite of their real activities. Moreover, in each of these two groups we have newcomers and young specialists and experienced university teachers and managers. The young university teachers are more flexible and motivated to get new knowledge, while experienced professors are quite sceptical and distrust another expertise.

Taking this feature in consideration, we decided to divide university teachers and managers into two separate tracks and leave common group works for the purpose of information change between participants.

Step 4. According to our idea of what the school should look like, we came up with the following schedule (Appendix 1).

Step 5. *Negotiating* is a key step on the way to the project implementation. It does not matter how innovative and beneficial your project is if the university administration does not confirm its implementation. The process of approving the event included: writing a memorandum addressed to the rector to hold a school with a rationale for the need for the project, preparing a presentation with the stages of implementing the school and a detailed study of the plan of the event, defending the project before the university administration, preparing an order to hold the school, coordinating and approving the budget. According to the theory of Shchedrovitsky [2020], there are three main positions in project activity: designer, customer and performer. It is important to know the features of each position and distinguish them at different stages of implementation. From the position of the project manager at this stage, it is very important to understand the full range of direct and indirect activities and delegate them to responsible persons. In this project, three main blocks can be distinguished: **education** that includes experts recruiting, lecture topics and formats negotiation, moderators recruiting and training, the School educational program agreement with LETI FVE office, negotiate participation of two teams from Tomsk Politechnik University and National Research Nuclear University MEPhI, organise a shooting with our experts, organise a media support and post-production; **service** that focuses on all sorts of participants' guidance and support as creating a School web page, providing participants with daily updated schedule and zoom links, providing participants with writing implements, providing all classes with stationery (paper, markers, notebooks, pens, flipcharts), organizing coffee breaks, and **logistics** that is aimed at ceaseless work of all departments.

During the school design, we decided to run Step 6. *Design and Conduct Formative evaluation* and Step 7. *Design and Conduct Summative evaluation* in frames of the projects defence. The first defence would be run right after the offline module

ended. During the presentations, the committee would ask questions related to previous lecturers, so we could assess if participants had use/apply new knowledge. After the project presentation, participants were supposed to get experts' feedback and back to work on the project. During the final projects defence, the summative evaluation would take place. At this stage, the university committee would make a decision about projects realisation at the university.

Reflection that takes part after all steps are completed will be described in detail in conclusion.

To sum up, the idea of innovative framework for organisational and educational change at ETU LETI will be realised in a form of a school. It will have two modules: offline on the university basis (5 days) and online (45 days). The school will be run in Russian for the purpose of quicker and freer communication. About 100 participants are supposed to participate in the project and in case of successful completion of the school get a professional development certificate.

Based on the previous findings, the following principles that make the project innovative were defined:

- focus on MA programs;
- two simultaneous tracks (for university teachers and university mid-level managers);
- online and offline formats;
- different forms of work and learning by doing approach;
- new roles of students;
- transformation through soft mind change approaches and renunciation of coercion.

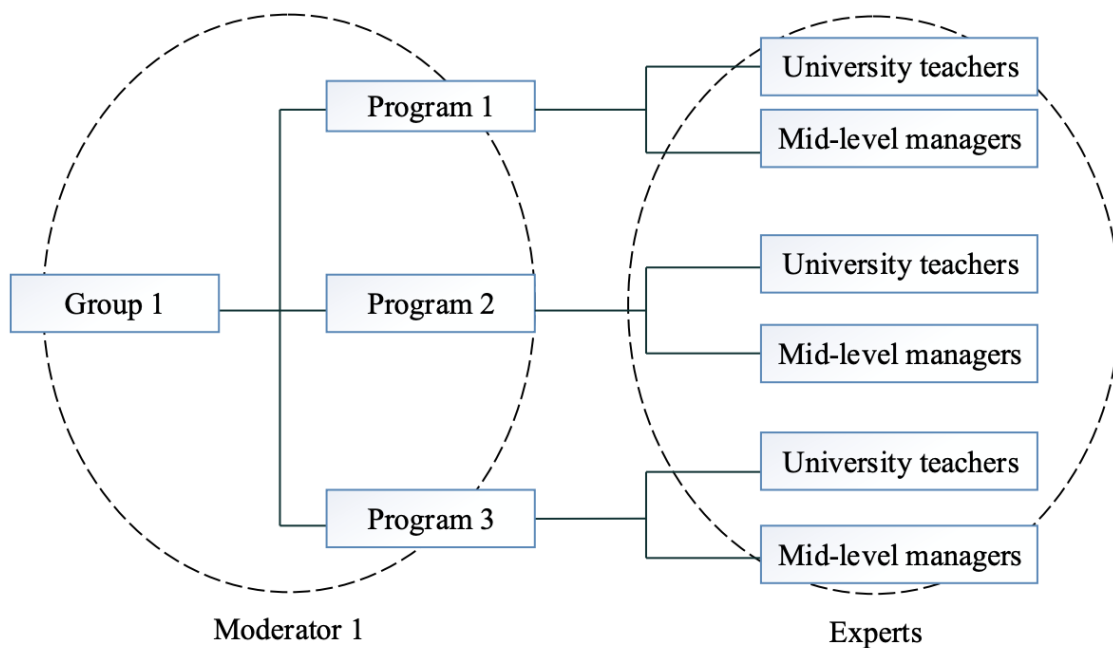
4.4 PROJECT IMPLEMENTATION

The project implementation consists of two main parts: organisational part devoted to formal procedures and logistics and educational one that focuses on the educational process itself and transformative university change as a result. In this paper, we will primarily consider the educational side.

In frames of WES participants are supposed to learn through project-based learning with elements of problem-based learning approach.

The school was structured according to inductive approach. It means that the participants were supposed to start with general topics about the role of master's degree in Russian HE and to finish with designing own master programs according to university ambitious and opportunities at the educational market.

Also, we proposed a complex organizational framework for school participants within the group work activities (scheme 3.2).



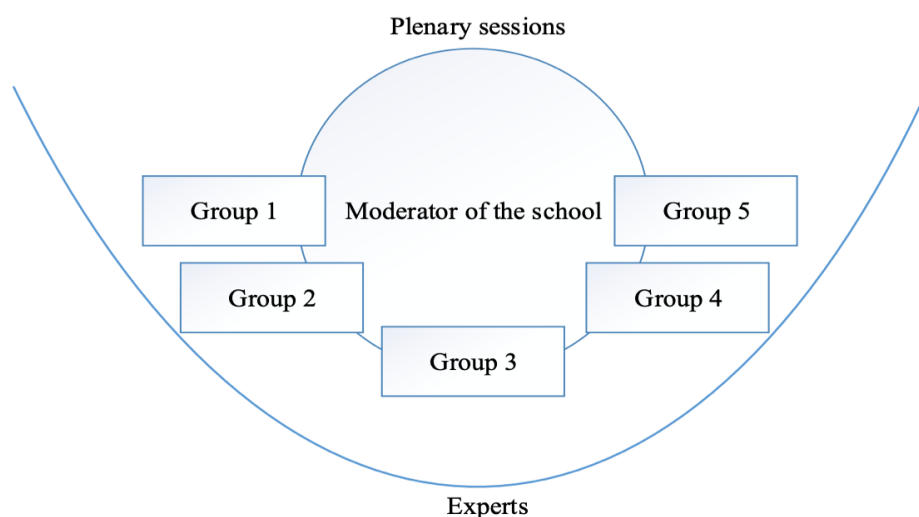
Scheme 4.2 Group work activities logistics

We had 7 groups that included 3-4 master programs (mini-groups) and consisted of 10-13 participants. Each mini-group presented a particular program to transform or design in frames of the project. According to requirements for participating in WES, each mini-group should consist of university teachers and mid-level managers. According to the initial idea, the presence of several programs in one workgroup should have encouraged the participants to exchange experiences, help each other express an opinion from the outside and make complex interdisciplinary connections that were supposed to help participants take a fresh look at their own programs. In addition, this way of organizing group work from several groups should allow participants to get to know their organization and colleagues from other departments better. For the group

dynamic and group progress, a moderator was responsible. The division within the group into mid-level managers and university teachers is also not accidental.

Our hypothesis was that learning separately and co-designing programs in the same amount of time would help groups develop a common language and form university teams. At the same time, this division into mid-level managers and university teachers was rather relative, the participants from administrative track could attend classes for teachers and vice versa. The main thing was to keep the balance of administrative and formal skills with flexible teaching approaches and instructional design within the group. The administrative track, as well as a track for university teachers, was run by external experts. Mostly, as a form of work, 60 min lecture with a Qs session was preferable. However, there were some practical-oriented classes: a one-day workshop devoted to marketing in HE, educational products promotion, and stakeholders' requirements; a communication session that aimed to build informal horizontal interaction between employees.

An exceptional place in the design of the school is occupied by plenaries (scheme 3.3). They take place on the 1st, 3rd and 5th day of school. On the first day, the moderators, together with the main moderator of the school, listen to the participants and their programs in order to assess the overall level of the teams and outline a work plan. Day 3 is the result of the work of the second day and the lectures on day 3. This plenary is attended by experts who previously lectured to the participants, they ask questions and comment on the projects of the groups. Day 5 is completely devoted to the projects defence. At that time, this was already a familiar



Scheme 4.2 Plenary sessions model

form of work for the participants, in which they now have to present their achievements not only to colleagues and “teachers”, but to a wide board of experts, consisting of industry and business representatives, university leaders and higher education experts. The format of plenary sessions helped us to implement continuous assessment, as during the groups’ presentations the team of moderators and experts recorded the progress of the participants since the last presentation. So, the plenary sessions are a kind of assessment of group work within the framework of the WES school.

Trying to operate on the Higher Order Thinking Skills, according to Bloom’s Taxonomy, we introduced a large number of hours devoted to group work. During the group works participants were supposed to apply new knowledge to real cases and design new ways for programs implementation and development. Let us explain the organisational logic as it could seem not obvious. Moderators of the work groups consist of both experienced moderators and second-year MA X-HE students. Before School started, MA students have a month-preparation course elaborated by the main moderator of WES. It included: articles about HE, current university excellence initiative description, podcast “ask Humboldt” devoted to issues in HE, and video-lectures about schematisation by Pavel Mrdulyash, Member of the Expert Council under the Government of the Russian Federation, Professor of Practice at the Institute of Public Strategies of the Moscow School of Management Skolkovo. Also, a day before the School started, all moderators had the opportunity to explore the space of the university for faster orientation in the area and conduct internal communication training witch aimed at stress relief and motivation increase.

It was important for us to understand whether the teachers and administrators of the university were ready to be guided by students. If not what the differences would be in the groups' progress during the group work sessions. At the same time group work was complicated by the fact that each of the groups had 2-3 master's degree programs. This means that the moderators had to operate in two or three dimensions at once and give timely feedback on each of the programs.

Projects defence, according to our scheme 3.1, represents a formative evaluation stage.

The work formats described above were applied to the on-campus module, where participants could directly interact with each other in a university physical space. The online module was planned according to the principle of independent project work. Throughout the online module, each group of participants had the opportunity to request online consultations with any of the school's experts. One day before the final projects defence we had a pre-defence session. The goal of this defence is to conduct a summative assessment of the groups.

After the final defence all participants got their certificates about further vocational education completed. Also, all participants were asked to take an online survey and leave feedback about the educational process and the organization of the school which helped us to form a more complete understanding of the processes of the school and identify its strong and weak points.

4.5 WHAT I HAVE DONE AND WHAT I WANT TO IMPROVE?

The implementation of the innovative framework for organisational and educational change at ETU “LETI” including the preparatory period took about 4 months that could be considered as a rapid mean for university change. Let us present some general statistics below.

During the stage of the project implementation:

- the school's web page was created on the LETI website;
- 8 external experts from Skolkovo, Yandex.Practicum, School of Advanced Studies (SAS), Immanuel Kant Baltic Federal University (IKBFU), National University of Science and Technology (MISIS) were involved;
- 8 moderators from SAS, RUDN University, University of Tyumen (UTMN), Don State Technical University (DSTU), Yugra State University (YUSU), and Adyghe State University (ASU) were involved;
- 2 universities were invited to participate in the project - Tomsk Politechnik University (TPU) and National Research Nuclear University MEPHI (ME

In frames of the WES:

- In total, 14 master's degree programs were announced;

- 11 programs were admitted to the finals, 6 of which were already implemented on the basis of LETI (programs were subject to transformation), 5 of them were new;
- 3 programs would be launched in September 2022;
- In frames of School 3 networking master programs were realized in cooperation with invited participants from MEPHI and TPU;
- 2 programs out of 11 will be taught in English;
- 6 programs are recommended for implementation in 2023;
- 2 programs have been retrained into FVE and recommended for implementation in 2023
- 60 participants had the certificates about the course completion,
- 78 participants applied for the WES in total;
- 88 work hours in total (35h of lecturers, 16h of group work, 40h of independent work).

According to the participants' feedback collected via google forms:

- school organization is 7 out of 10;
- effectiveness of group work format is 10 out of 10;
- participation (self-assessment) is 8 out of 10 (which corresponds to the meaning “worked highly efficiently”);
- idea of the school is 8 out of 10.

Among lecturers and different sorts of activities the most useful lecture is “Market requirements” by business and industry partners, the most useful activity is plenary sessions lead by the main moderator of the school. By the end of the project, the following statements were formulated by the participants of WES:

- It is important to start designing the program from the portrait of the graduate, while not forgetting about the requirements for the applicant;
- It is possible to transform educational programs even with rigid bureaucratic guidelines and the inflexible structure of the university;
- It is important to interact with industry;
- It is important to collaborate with colleagues within the university;

- It is important to constantly update educational products.

To the question “what should be improved” WES participants list the following:

- more relevant cases of transformation in STEM universities;
- higher level of moderators;
- intensity of the school;
- better organisation (schedule, classes, timing and logistics).

Although participants could list some issues and articulate them in their feedbacks, they did not see all obstacles while organising a project. As a main problem that should be taken into consideration more carefully, is a role distribution during the preparation period. According to Chedrovitski [Организационное проектирование в системе управленческой деятельности, p. 21-38], organization is the activity of creating activity. It should be considered as a productive activity and its result (product) is another activity. In the course of organizational design, a special reality is created in which all participants in the activity gather with the corresponding “places” for each individual. And that is exactly where we made a mistake. A common weakness of each newcomer leader is an intention to control everything and everybody. That is how organisational structure becomes leader-centred, and without a leader, no person can act on one's own. Thus, each actor of the framework should know his/her position, responsibilities and opportunities. Moreover, the individual has some autonomy and know at least 2 persons, except the leader, that he/she can approach to.

The implementation of the innovative framework for organizational and educational change has a direct and indirect impact on the university activities. To the direct output we can attribute the transformation and redesign of majority of the master’s program that had been enrolled in the WES. The programs that were recommended for launching this year have noticeably change the formats of programs implementation. They are not a pipeline-model programs anymore. For example, while designing a new network master program (in cooperation with TPU) Automation and Mechatronics, working group managed to identify the scope and the main problem that this program is designed to deal with. Participants identified a set of competencies that an applicant should have and supplemented them with courses that will help strengthen existing or acquire skills necessary for the program. The structure of the program was

also developed with a detailed description of the tasks and roles of each participant in educational activities (Appendix 2). Also, the idea of project work in frames of WES was reflected in the *Automation and Mechatronics* program (Appendix 3). Based on lectures of our experts, participants choose a program organisational model which is modules (Appendix 4). This approach is the best option when organizing a network program. First, modules are more flexible than a whole course. Secondly, replacing a module or updating it is much more “painless” than replacing an entire course. And finally, the same module, implemented in an online format, can be used in parallel in the framework of related master's programs or programs of additional professional education.

The second important output is a cooperation with two leading Russian Universities – TPU and MEPHE. The implementation of joint educational programs can contribute to the entry of the university into the consortium. According to Melnyk [2022], consortium is a relatively soft form of aggregation, in which universities retain full legal autonomy, but combine to improve the efficiency of processes and achieve their goals.

The third benefit is new stakeholders. Previously, the interaction of the university with representatives of business and industry took place indirectly. Universities trained and graduated students, organizations recruited them. For the first time in many years, “employers” met directly with the designers of educational programs. According to the feedback of the project participants, the business and industry representatives’ presentations were most useful for each educational program among all activities. All participants noted changes in market demands for the competencies of university graduates.

As indirect impact, we can highlight a few points:

- at the stage of the WES web page development, new design solutions were implemented. As a result, the following university projects started to design the landings in a more creative way. According to Yandex Metrics, the WES page activity set an attendance record at the university official page. This fact can be considered while planning University promotion strategy;

- the use of different forms of work of participants at WES, the discussion of classroom management approach made university teachers and managers think about reorganization of academic space. The corresponding document was drawn up and sent to the rector for consideration. We hope that measures to improve the educational environment will be taken soon.
- Gaebel, Zhang and others [learning and teaching strategies, p.14] say that learning and teaching has become an institutional priority, generating dedicated strategies and structures such as learning and teaching centres. And ETU “LETI” is not an exception. Despite some problems and inaccuracies in the organization of WES, in general, the project gave positive dynamics and a path to development. So, at the moment, a project is being discussed to establish a new structural unit – teaching and learning centre.

This reflection concerns the first tour of the innovative framework for organisational and educational change implementation. The chosen model is quite flexible and allows us to experiment with the framework. Given all the shortcomings and advantages, it is quite possible to make appropriate adjustments and launch the updated project a second time.

DISCUSSION AND RECOMMENDATIONS

The statistics presented in the previous chapters and the description of the implementation of the innovation framework for organizational and educational change demonstrates good results in the development and promotion of master's programs at the university. It is worth noting that this experience can be implemented at other universities both in master's programs and in undergraduate or FVE programs. The advantages of this framework are that the structure of the project depends on the requests of the university, which are determined, through the analysis of the mission of the university, university needs analysis and through a set of interviews (top managers and university teachers), shadowing, observations.

Although the WES project had a positive influence to the master's program development at ETU "LETI" and can be realized in other universities or even commercialized, we had an opportunity to compare our school with the most similar project "Kod"⁹ realized on the basis of SKOLKOVO Education Development Centre (SEDeC).

The "Code of educational programs" (hereinafter "Kod") program was launched in February 2022 (about 3 weeks after the end of the full-time module of WES). From the very beginning of being on the program as an assistant moderator, we could observe both similar organizational or instructional decisions, as well as significant differences between the two programs. We made a comparative table (Appendix 5) including dimensions that seemed us important:

1. *Focus and specialisation* are about Kod and WES purpose and focus groups. Depending on the object of transformation (educational level or an educational program format), we can define the potential participants.

2. *Format and Duration*. There are two questions to be answered: How and How long will be organised the projects.

3. *Content and Work Formats*. General topics to be taught and discussed in frames of schools and teaching and learning activities that will engage participants and contribute to better understanding of the material.

⁹ The full title of the program – "КОД образовательных программ" can be translated as the "Code of educational programs". When translating the name of the program, transliteration was used.

4. *Participants' Support.* This dimension is more about services provided for participants in the learning process.

5. *Internal Organisational Processes* that is about organisational project designs of both schools and interaction between all actors of the school (organizers, moderators, participants etc.).

First, the SKOLKOVO project, unlike the WES, is not tied to a specific educational level. According to the information provided on the program website, the Kod program is aimed at designing and launching new educational programs for bachelor and master's degree programs. We believe that the mix of two different levels (both in their purpose and in the design logic) such as bachelor's and master's degrees make the program vulnerable in organizational terms (since it is necessary to introduce a division into tracks) or reduces the quality of the educational result (due to the generalization of information or less material due to the need to cover two topics).

Discussing the second point, we can conclude that the “Kod” program is more extensive than WES, despite the smaller number of participants. Both in the preparation of the Kod and in its implementation, a larger number of actors are involved, and in terms of the implementation time, Kod is almost three times longer than WES. Longer duration requires more working formats for interaction, receiving and analysing information. Also, a clearer and more thoughtful system of interaction with participants and services can be explained by the scale of the project and the existing experience of colleagues.

As for the *Content and Work Formats*, like most of the large educational projects of SKOLKOVO, the program was developed according to the principles of the system-thinking-activity methodology. According to Maracha, Reut and Baranov [2017, p. 1], the system-thought-activity methodology was developed by the Moscow Methodological Circle (MMC) led by Shchedrovitsky G. P. in USSR.

System-Thinking-Activity Approach (STA) can be characterized by:

- Systems thinking that corresponds to the shift of researchers' interest from “systems sciences” to “systems rationality” – as it is discussed in holistic systems thinking approaches. This method allows to formulate original vision of problems of the systems approach: not to investigate “systemic

objects”, but to conceptualize and resolve “systemic situations” as a form of work with complex problems.

- Thinking-Activity Scheme and moderation technologies. *In Thinking-Activity Scheme* (published in 1983) thinking and practical activity are represented in the form of different “layers” (“Pure Thinking” and “Thinking-Action”), divided by a “Thinking-Communication” layer. Links between three layers of Thinking-Activity Scheme are mediated by Reflection and Understanding processes. Moderation technologies are considered as the mode of communicative management supporting interaction and horizontal communication.
- Systemic 3D-Methodology which is the principle of thinking in the space of two “orthogonal” planes: 1) Object-Ontological plane with schemes and objects of practical theory located on it; 2) Organizational-Activity plane with schemes organizing multi-professional communications and methods, forms and instruments of transdisciplinary thinking [Maracha, Reut and Baranov, p. 2-5].

Participants’ support provided by SKOLKOVO was much more complex. Every two days, participants took an express test for Covid-19 in order to exclude the possibility of infection with close interaction of participants over 12 hours in the classrooms. Since the financing of the WES did not provide for the implementation of preventive diagnostic measures, this type of support was not provided to the participants. During the school, the number of participants constantly varied, many participants moved to an online format, which jeopardized the concept of the school and created additional organizational difficulties. Moreover, Kod provided more thorough support to the participants in academic terms. Moderators, organizers and experts were always available for questions, in the intervals between modules, moderators organized online consultations, based on participants’ requests, the analytical center selected the requested information and statistics. In the case of WES, these measures would be redundant with an offline module of 5 days and an online module, the purpose of which is to finalize the programs.

Of the positive aspects noted in the “Kod” can be identified a high level of project design and its organization, and a high level of group dynamics. The negative impact on the efficiency of the work of participants could be attributed to online modules. While in their work environment, it is difficult for participants to return to work on projects, and very often in online meetings we have observed significantly poor progress of participants in comparison with the offline module.

Even though we have similar examples which provide similar activities for educational programs transformation, we cannot characterize the outputs of two schools fully. For a more accurate comparative analysis, we suggest waiting for the end of the implementation of SKOLKOVO Development Education Centre “Kod” and compare master’s programs with those that were designed/transformed by WES School participants. In addition, it is worth assessing the indirect impact that could occur in educational organizations in connection with the transformation of educational programs (structural organizational changes, educational transformations etc.). It is also possible to analyse the financial component: the cost of the programs, income from sales. We will get the most accurate results after the launch of these programs on the educational market when comparing admission control figures.

In this thesis, a case of implementation of innovative framework for educational and organisational change elaborated by MA X-HE student and implemented at Saint Petersburg Electrotechnical University “LETI” was presented. The purpose of the project implementation was to satisfy university ambitions to become the main RnD platform and raise the number of master’s degree students through revising the educational programs and raising the quality of teaching and learning.

The results of the study demonstrate positive influence on different university departments and structures. As a tangible result, the university has 12 programs to introduce at the university (3 of them will be already launched in September). In frames of WES school, LETI managed to conclude partnership agreements with two universities: Tomsk Polytechnic University (TPU) and National Research Nuclear University MEPHI (MEPHI).

From the teaching and learning point of view, university teachers and mid-level university managers acquainted new knowledge, skills and competences about forms and organisation of educational process. Moreover, WES became a board for communication and negotiation for both representatives of university teachers and university managers’ tracks. Organisational framework allowed participants to interact with external stakeholders from a variety industrial field that also had a beneficial effect to program development strategy. Collaborative design of educational models with students met a lot of positive insights for participants of both tracks.

Indirect results of the school can be called a new approach to the design of the university website, which is also important for the organization from the standpoint of marketing and promotion. During discussions, school participants often raised the issue of reorganizing the educational space, which made the university administration think about this issue. We hope that this issue will receive its development and will be resolved soon. The effectiveness of the school has been evaluated at the highest level of the university administration, the rector and his team are thinking about looping the project (make the school seasonal or annual) or establishing a centre of educational competencies.

The elaborated model can be transferable to other universities and be implemented in companies with executive and management segment. Moreover, the project can be implemented both independently and in addition to the School of rectors provided by SEDeC.

We consider the framework innovative because of its organisational design and its focus on:

- master's degree programs. This level of education is distinctive in comparison with bachelor's degree, PhD and further vocational educational programs.
- collaborative work of university teachers and university mid-level managers.
- the roles differentiation of representatives of each track in the educational process with the aim of further contribution of each actor in the joint development of programs.
- current teaching and learning techniques in university teachers' activities that promote effective learning and develop soft-skills.

In conclusion, we would like to say that the project can be considered as successful one. The evidence of positive changes at the university is apparent. On the basis of the WES materials, additional research can be carried out, which can serve as a starting point when working on the problem of transforming universities.

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WES Schedule

The principles of designing the school were based on the deductive method – from the general to the particular. First, the participants will have to get to know each other and get used to the environment, so the **first day** can be considered introductory. The main focus of the first day is on the master's level. Next (**day 2**) we follow the logic of the product approach. Participants are invited to devote to a full day to process of packaging the educational product, and designing the ideal master's program. To begin with, the participants got acquainted with non-standard cases of the implementation of master's programs in the Russian market, then they were asked to design their own concepts for the development of their programs. On the **third day**, the participants had to implement their programs in the bureaucratic apparatus of our education system, meeting the requirements of the university and the Federal State Educational Standard. So, on the third day, there is a division into two tracks: for university teachers and administrators. The idea of two parallel tracks is substantiated by the hypothesis that teachers and managers look at the same problem differently and use different approaches in solving certain problems. So, the system is lame depending on who manages it: a teacher or an administrator. Our idea is that every problem will be considered both from the position of a teacher and from the position of an administrator. Participants optionally join one of the two discussions, and later share their thoughts in working groups. Thus, two of the two topics will be worked out by all school participants. Also, the participants will have an idea about the activities of the “opposition”, which, perhaps, will facilitate further professional communication, as teachers will begin to understand administrators, and administrators, in turn, will know more about the activities of teachers. The **fourth day** was also divided into two tracks and followed the reverse principle from general to particular. On the teaching track, participants were presented with a lecture on “lesson builder” while administrators listened to a lecture on evaluating an educational product. The **fifth day** was mainly

devoted to the defence of projects. Nevertheless, in order to loop the idea of the school, it was decided to hold the second part of the introductory lecture (Day 1) “Architecture of Master's Programs” with specific examples and cases, which, in theory, were supposed to reinforce the theory of the introductory lecture with practice. Also, two lectures on self-positioning were offered as a bonus for two tracks: “the image of a university teacher” and “The image of a university administrator”. Thus, the participants had to start working at the school by identifying global trends and the place of their master's programs on the world agenda and end the program with the questions “what can I personally do to make education better?”, “who is a real teacher / Administrator?”, “What have I already achieved and what am I missing?”.

Day (date)	Time	Activities
Preparatory stage		For groups to apply: prepare a presentation concerning an educational program that is supposed to be transformed/created. The presentation should include: program description, analysis of the educational market, benefits, partners and requirements for students/university/teachers.
Day 1	10:00-10:15	Opening ceremony
	10:15-11:40	Architecture of MA programs. Part 1
	11:40-12:00	Break
	12:00-13:30	Market requirements. (Invited stakeholders from Gazprom, Rosatom, etc.)
	13:30-14:30	Lunch
	14:30-16:00	Briefing
		Statement of the problem
	16:00-16:30	Break
	16:30-18:30	Plenary session

	17:30-18:00	Break
	18:00-19:00	Plenary session
Day 2	10:00-11:30	Briefing
	11:30-11:40	Break
	11:40-13:00	Marketing in Education
	13:00-14:00	Lunch
	14:00-18:00	Workshop
	18:00-19:00	Group Work
Day 3	10:00-11:30	Briefing
	11:30-11:50	Break
	11:50-13:30	Way to the educational program
		How to read ФГОСЫ
	13:00-14:00	Lunch
	14:00-16:00	Plenary session
	16:00-17:30	Break
	17:30-17:45	Group Work
	18:00-19:00	Reflection
Day 4	10:00-10:10	Briefing
	10:10-11:30	Universal structure of any lesson
		University needs
	11:30-11:40	Break
	11:40-13:00	Teaching techniques
	13:00-14:00	Lunch

	14:00-15:30	Group Work
	15:30-17:00	Communication session
	17:00-17:30	Break
	17:30-18:00	Reflection
	18:00-19:30	Group Work
Day 5	10:00-11:30	Architecture of MA programs. Part 2
	11:30-13:00	Image of university teacher
		Image of university manager
	13:00-14:00	Lunch
	14:00-18:00	Projects defence
	18:00-19:00	Reflection.

ОПИСАНИЕ ПРОЕКТА

Проблема: проектирование и запуск промышленных объектов в условиях цифровой экономики



Fig. 4. Automation and Mechatronics. Project description

ПРОЕКТНАЯ РАБОТА

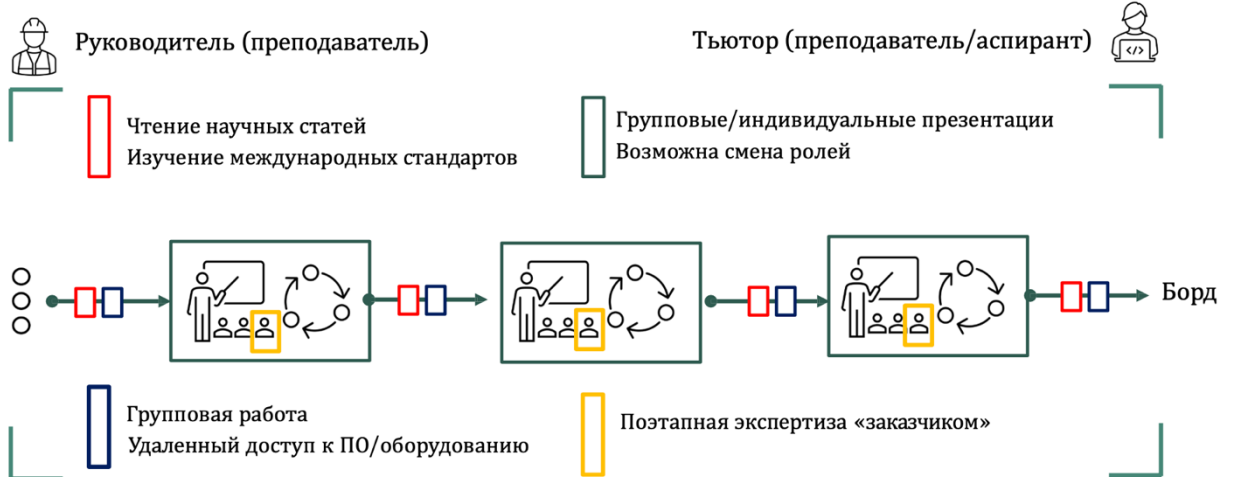


Fig. 5. Automation and Mechatronics. Project work instruction

МОДУЛИ



Fig. 6. Automation and Mechatronics. Modules

Comparative table

№	Criteria	WES	KOD
1	Focus and Specialisation	Master's degree programs	Any educational program
1.1	Participants	University teachers + university mid-level administrators (about 70-80 participants)	University staff responsible for educational programs: heads of educational programs, academic directors, heads of departments, faculty, specialists of the educational and methodological department. Employees of organizations that are responsible for interaction with universities within the framework of partnership educational programs. (about 50-60 participants)
2	Format and Program Duration	2 modules: Offline – 5 days Online – 45 days + online consultations	6 modules: 3 modules online (days) 3 modules offline (days) + online consultations
2.1	Offline module	On campus	On campus
2.2	Working hours	9:00-18:00	9:00-21:00
2.3	Rest time	Lunch + 2 coffee breaks	Lunch + 2 coffee breaks
3	Content and Forms of work		
3.1	Content	1. Market requirements for master's degree graduates 2. Marketing in HE (trends, solutions, cases) 3. Instructional design (teaching and learning) 4. Organizational design 5. Self-positioning	1. Internal and external circumstances for launching an educational program; 2. The content of the educational process; 3. How to teach? 4. Instructional Design 5. Organizational design 6. Launching a program
3.2	Number of experts	2 experts from LETI 8 external experts	6 experts from SKOLKOVO More than 20 guest experts

3.3	Formats	Group works Lectures Work-shop Plenary sessions Communication session Reflections (written, oral forms)	Group works Lectures Plenary sessions Communication session Boards Reflections (written, oral forms)
4	Participants' support	Chat for the participants Moderators Online consultations Video lectures recorded (on the WES web page)	Chat for the participants Moderators Moderators' assistants Online consultations Additional literature Miro boards LMS platform Canvas
5	Internal organizational processes	Moderators' meetings Briefing with stakeholders Intercommunication: via project manager 1 project manager	Moderator's meetings Intercommunication: Moderators' chat Work groups' chat 3 project managers