

MASTER'S THESIS-THE STARTING POINT OF THE DEVELOPER IN THE REAL ESTATE MARKET

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Abstract: *The information base of the research was the professional standard "Head of the construction organization". Based on the results of the study, the main professional educational master program (IPEPC) "Investment Project and Estimated Pricing in Construction" was developed. The methodology of preparation and certification of the graduate in the program is focused on the technology of project-based learning. A variant approach in technology of project-based learning allows reacting in a timely manner to the emerging challenges of the external environment and the deterioration of key indicators of business activity in the construction business and development.*

Keywords: master's program, project-based learning, investment project, substantiation of the design decision, development.

The reformation of the Russian higher school is focused on the maximum convergence of requirements for the graduate from the standpoint of educational and professional standards. Changing the vector of the educational process from the approach based on theoretical knowledge (passive teaching methods "teacher-student", active teaching methods "teacher-student") to a practice-oriented approach requires the implementation of interactive technologies into the learning process. This corresponds to the proposed process of preparing a developer for the master's program "Investment Project and Estimated Pricing in Construction" in the area 08.04.01 Construction in FSBEI HE "IUT".

Modern requirements to the process of investment design are focused on a combination of system, object-oriented and calculation-experimental approaches, which can "bring to a stand" a graduate of a higher school with a traditional education system¹.

¹ M.V. Vinichenko, E.V. Frolova, A.N. Maloletko, V.V. Bondaletov, O.V. Rogach, "Main directions of creating a favorable learning environment and labor protection in the interest of enhancing health of the personnel and students in education foundation", in *International Electronic Journal of Mathematics Education*, 2016, vol. 11, no. 5, p. 1163-1174; K.N. Dementiev, O.V. Zashchirinskaya, O.V. Pristav, "Special and inclusive education systems for disabled children: Health technology application potential", in *Teoriya i Praktika Fizicheskoy Kultury*, 2016, no. 7, pp. 41-43; V.A. Gnevasheva, "The role of

The system approach considers an investment project (hereinafter referred to as an IP) as a set of elements and interrelations between them, united by a common purpose, i.e. as a system². The elements, their interrelations and the purpose of the project can be represented by subsystems as a result of structuring and/or decomposition. The objectives of the IP can be: increasing the economic efficiency of production, increasing production volume, release of a fundamentally new product. Managing effective impacts and structured solutions in the system approach are formed in accordance with the criteria of optimality and constraints that represent the interests of the investment activity subjects³.

Object-oriented approach allows one to consider the investment project and its components as an object from the standpoint of informatics. This approach makes it possible to extend the developed logical and mathematical constructions to solve similar problems. For example, the Markowitz model, originally designed to optimize the structure of the securities portfolio, was then modified and is used to optimize the portfolio of investment projects. The Sharpe model also finds applications in the analysis of investment risks, both for portfolio and real investments. Moreover, this approach reduces the costs for developing and maintaining a feasibility study and business plan for the project.

The calculation-experimental approach is based on the idea of mental experiments with models of economic systems and makes it possible to study the responses of investment cycle models. For example, the net present value and the internal rate of return are analyzed depending on the variable parameters and factors, such as the effective percentage rate and inflation rates. Computer experiments are performed in conjunction with the synthesis of complex models, and then an experimental test is carried out with possible subsequent modification of the synthesized model.

Modern information technologies in investment design serve as a tool for assessing the technical-and-economic feasibility and consequences

education in the development of Russian society”, in *Russian Education and Society*, 2011, vol. 53, no. 4, p. 84-96.

² A. Kaldiyarov, D.A. Kaldiyarov, D.S. Nardin, S.A. Nardina, “Process approach to managing real investment projects focused on import substitution of products”, in *Journal of Applied Economic Sciences*, 2016, vol. 11, no. 7, p. 1368-1375.

³ E.M. Akhmetshin, E.I. Artemova, L.V. Vermennikova, R.A. Shichiyakh, N.A. Prodanova, N.M. Kuchukova, “Management of investment attractiveness of enterprises: Principles, methods, organization”, in *International Journal of Applied Business and Economic Research*, 2017, vol. 15, no. 23, p. 71-82.

of implementing investment projects⁴. Complex application of these approaches and information technologies is preceded by analytical studies, development of mathematical models and software products, which is allowed by the main professional educational master program (IPEPC) "Investment design and estimated pricing in construction". In connection with the foregoing, the authors of the article emphasize the practical importance of the development of the above-mentioned professional educational master's program and the relevance of the problem raised in this article on the eve of the FSBEI HE "IUT" enrollment campaign in 2018.

The technology of project education in the program includes the basic methods of inter-active education that allows one to achieve the level of practical-oriented education of the undergraduate and stimulates the latter to develop independently theoretical and methodological foundations and practical skills in justifying and adopting the best investment portfolio for the developer customer.

The basis of educational practice-oriented process is interactive methods, as a special form of organization of cognitive activity. The information base of this study was the state educational standard of the third generation in the area 08.04.01 Construction⁵, and the professional standard "Head of the construction organization".⁶ This tandem is possible from December, 2017 after the entry into force, and: "in determining professional competencies based on professional standards, the Organization chooses professional standards relevant to the professional activities of graduates"⁷, which allows to expand the capacity of the educational institution in improving the quality of teaching graduates for the labor market⁸.

⁴ E.V. Nalivaychenko, S.P. Kirilchuk, N.V. Apatova, T.N. Skorobogatova, O.V. Boychenko, "Managing intellectual property in information economy", in *Astra Salvensis*, 2018, vol. 6, p. 711-721.

⁵ On Approval of the Federal State Educational Standard of Higher Education Master's Degree in the Area 08.04.01 Construction, 2017. Available: http://www.consultant.ru/document/cons_doc_LAW_218854/.

⁶ On Approval of the Professional Standard "Head of a Construction Organization", 2015. Available: http://www.consultant.ru/document/cons_doc_LAW_174805/.

⁷ On Approval of the Federal State Educational Standard of Higher Education Master's Degree in the Area 08.04.01 Construction, 2017. Available: http://www.consultant.ru/document/cons_doc_LAW_218854/.

⁸ E. Lutsenko, N. Bogachenko, O. Konovalenko, E. Gasanov, L. Reydel, "Higher education institution image in the system of social filters of the educational services market", in *Astra Salvensis*, 2018, vol. 6, p. 909-917; Y.P. Averin, V.A. Sushko, "Students' behaviour in relation to learning and factors shaping it in the modern Russia conditions",

Materials and methods

One of the forms of the interactive method of teaching is the project method. Under the project method, it is often suggested to understand such a system of education, in which students acquire knowledge and skills in the process of self-planning and performing consistently practical tasks with increasing their level of complexity and expanding the coverage of professional competences⁹. Teacher Yu.V. Gushchin summarized and systematized the theory and practice of using interactive methods and technologies of teaching¹⁰. So, under the project the author suggests to understand a set of search, research, calculation, graphic and other types of work per-formed by students independently, but under the guidance of the teacher, with the purpose of practical or theoretical solution of a significant problem.

In the project, a student is often offered the following sequence of work: preparation, planning, research, results, presentation/report, evaluation of results and process. This sequence fully corresponds to the "Methodological recommendations"¹¹.

Schematically, the interaction of the participants in the educational process when implementing the project method in education will be presented in Figure 1, supplemented with the third participant in the process – the employer.

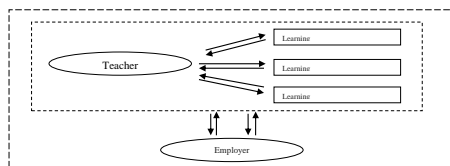


Figure 1: Block Diagram of the Educational Process with the Implementation of an Inter-Active Project Method

in *Astra Salvensis*, 2018, vol. 6, p. 75-82; T.N. Savina, "Diagnostics of the regional labour market in the format of economic security indicators", in *Astra Salvensis*, 2018, vol. 6, p. 929-939.

⁹ S.A. Sergeeva, N. Kadyrov, E. Stroganova, "Theoretical fundamentals and practice of formation of professional competencies of experts in the field of procurement for the use of statistical analysis results", in *Astra Salvensis*, 2018, vol. 6, p. 159-169.

¹⁰ Yu.V. Gushchin. "Interactive Methods of Teaching in Higher Education", in *Dubna Psychological Journal*, 2012, vol. 2, p. 1-18.

¹¹ Methodological Recommendations for Estimation of Efficiency of Investment Projects, 1999. Available: www.consultant.ru; V. Berens, P.M. Khavranek. *Guide to the Preparation of Industrial Technical and Economic Research*. UNIDO, Vienna, 1995.

In accordance with the content of IPEPC implemented in FSBEI HE "IUT" in the area 08.04.01 Construction, the project method is a learning system in which undergraduates acquire theoretical knowledge in an educational institution in the process of self-planning and performing gradually more complicated practical tasks in the process of developing an investment project, fixing knowledge with practical skills and abilities in design and research institutes during the period of practical training.

Results and discussion

Having studied the specialized literature on investment design technologies and theoretical and methodical literature and feedback on the practice of using interactive teaching methods, we will outline the main effects that the trio "student ↔ teacher ↔ employer ↔ student" achieves when moving to the project method in education under the Master's program "Investment design and Estimated Pricing in Construction" in the area 08.04.01 Construction in the Construction Institute of the FSBEI HE "Industrial University of Tyumen":

1) Effective acquisition of educational material through turning students on the future profession. The effect is achievable under the condition of formulating tasks for coursework and projects on algorithms as close as possible to realistic technical assignments. For example, the discipline "Modern technologies of construction and reconstruction of real estate" provides the adaptation of a typical analog project with the help of AutoCAD® software for automated 2D and 3D design to the features of the object of the dissertation research. For the technical project, a student of the discipline "Automated Estimates in Construction" prepares the estimate documentation in the PC "GRAND-Smet" and comes to the adjusted value of capital investments.

When carrying out coursework on the disciplines "Features of marketing research in justification of design solutions" and "Evaluation of business and real estate objects" the possibilities of software products SPSS Statistics (the abbreviation of "Statistical Package for the Social Sciences") and PASW (Predictive Analytics SoftWare) Statistics are used for statistical data processing of large arrays in justifying the significance of the design solution for the region. The disciplines "Diagnostics and Risk Management of Investment Projects" and "Information Technologies in Management of Investment and Construction Projects" provide the adoption of the analytical packages Project Expert and MSP

(Microsoft Project) in the preparation of the investment project. The final stage of the project learning in the master's program is the energy audit of the industrial building or housing and communal complex for the project-analogue with the distribution of costs for the responsibility centers in 1C:ERP Enterprise management (discipline "Accounting, auditing and taxation in construction").

As part of the course design, it is provided that particular sections of the investment project will be done collectively in view of the special features of the student's educational program specialization in the first stage¹². Limitations on the bachelor's program specialization for admission of graduates do not apply to master's programs; therefore, the design method of teaching is quite helpful. Groups of students are divided into subgroups, taking into account the uniform distribution of majors/educational program specializations at the level of the first education, in accordance with which the lack of theoretical knowledge in the subgroup is eliminated. The economist assists the civil engineer in developing estimates and analyzing ROI of the project, and the civil engineer teaches design and modeling skills.

As a result of a comprehensive approach to project education, by the fourth term, the student has a full-fledged investment project, or its simplified variant in the form of a real business plan.

2) Independent search of ways and variants of solving the set educational and scientific task by students (choice of one of the offered variants or finding of own variant/model of the design decision justification);

3) Establishment of interaction between the educational institution, the employer and the student at the stages of the development of the teaching material and its application on the production and pre-graduation practices.

According to the road map for 2017-2018 adopted by the FSBEI HE "Industrial University of Tyumen", since 2018, the program "Investment Project and Estimated Pricing in Construction" provides the transition to a model of dual supervision of research and final qualification works. The program is assigned to the Department of Economics in Construction, which is equipped by qualified specialists in the economics, and it is planned to attract leading teachers of the Construction Institute and/or highly qualified specialists of design, estimating and development

¹² E.E. Nakhratova, I.Y. Ilina, A.I. Zotova, O.A. Urzha, N.V. Starostenkov, "Analysis of the relevance of educational programs for applicants and the labor market", in *European Research Studies Journal*, 2017, vol. 20, no. 3A, p. 144-152.

organizations of the region to help them. This decision is due to the need to expand the professional competencies of the master's student and to increase the practical significance of the results of his thesis research for the region¹³.

The choice in favor of the two program supervisors assigned to the master's student was carried out taking into account the poll of the students themselves and potential employers, including those providing places for practice. When appointing supervisors, the wishes of the master's student and the potential object of his thesis research are taken into account. The object of SRW and GCW can be the following ones: assets, land plots, urban areas; industrial and civil buildings, transport infrastructure facilities; investment and developer's projects; investment and construction complex; state regulation in the field of capital construction, housing and communal services, energy efficient technologies and energy saving in the regions of Russia; scientific and technical and organizational solutions for the development, estimation, examination and implementation of the investment project; technical documentation (DED – design and estimate documentation, CPD-construction planning design); quality management system, etc.¹⁴.

As a result of the project teaching method implementation, as a teaching system (Table 1), oriented towards the consistent implementation of practical tasks on the development of term papers and research in accordance with them¹⁵, and the curriculum of the above-mentioned learning program, the graduate goes to the defense of the thesis with a

¹³ N.P. Gavrilyuk, Y.V. Kryucheva, S.N. Semenkova, "Professional integrity within the structure of professional activity: Psychological and pedagogical formation basis", in *Astra Salvensis*, 2018, vol. 6, no. 12, p. 183-191.

¹⁴ E.V. Frolova, "Modern practices in managing the development of municipal infrastructure", Materials of the Afanasiev Readings, 2012, vol. 1, no. 10, p. 291-297; E.V. Povorina, O.V. Serbskaya, N.F. Bondaletova, E.V. Duplij, N.V. Buley, "Improving quality control tools for domestic industrial production", in *International Journal of Applied Business and Economic Research*, 2017, vol. 15, no. 12, 283-296.

¹⁵ On Amending the Urban Development Code of the Russian Federation and Articles 11 and 14 of the Federal Law "On Investment Activities in the Russian Federation in the Form of Capital Investments", 2016. Available: http://www.consultant.ru/document/cons_doc_LAW_200745/; On Investment Activities in the Russian Federation, Implemented in the Form of Capital Investments, 2016. Available: http://www.consultant.ru/document/cons_doc_LAW_22142/; On the Composition of the Sections of the Project Documentation and the Requirements for Their Content, 2017. Available: http://www.consultant.ru/document/cons_doc_LAW_212071/; Urban Planning. Planning and Development of Urban and Rural Settlements. Moscow, 2011. Available: www.srosp.ru.

ready-made investment project in the form of design estimates (DED): graphic materials (drawings) reflecting architectural and planning, structural and layout solutions of the future building; explanatory notes explaining the technical, territorial and social possibility of its construction in a specific natural environment; an estimate and economic part that determines the cost of construction and justifies the economic feasibility of the costs of financial, material and technical and labor resources¹⁶.

According to the content of GPEP implemented in the FSBEI HE "Industrial University of Tyumen" in the area 08.04.01 Construction and the information provided in Table 1, the project method is a teaching system in which undergraduates acquire knowledge and skills in the process of self-planning and implementation of increasingly more complicated practical tasks aimed at increasing the competitiveness of the graduate in the labor market.

Table 1: Sequence of Work on the Project

Stage of work on the project	The content of the work at this stage	The student's activity	The activity of the teacher and the supervisor from the educational institution	Activities of the supervisor from the enterprise
Preparation /pre-investment stage of design	Definition of the topic and objectives of the project	Discuss the subject with the teacher, and supervisors from the university and the enterprise, receive additional information if necessary. Set research objectives	They introduce the meaning of the project approach and motivate the student. Assist in setting research objectives, course design	Helps in the search for an analogue project, its actualization to the set goals of research and course design

¹⁶ Department of Investment Policy and State Support of Entrepreneurship of the Tyumen Region. Available: <http://eng.tyumen-region.ru>; Investment Portal of Tyumen. Available: <http://invest.tyumen-city.ru/>; Information on New Industrial Projects with Contacts of Supervisors on the Side of the Investor, the Customer, the Designer, etc. Available: <http://bbgl.ru/>; I.A. Kapitonov, I.V. Zhukovskaya, R.R. Khusaenov, V.A. Monakhov, "Competitiveness and competitive advantages of enterprises in the energy sector", in *International Journal of Energy Economics and Policy*, 2018, vol. 8, no. 5, pp. 300-305.

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Planning	Definition of sources of information; b) ways of collecting and analyzing information; c) the way the results are presented (report form); d) procedures and criteria for evaluating results and processes; e) and distribution of tasks (duties) between team members	a) Develop an action plan; b) ways of collecting and analyzing information; c) the way the results are presented (report form); d) procedures and criteria for evaluating results and processes; e) and distribution of tasks (duties) between team members	Develop an action plan; Formulate research objectives	Offers ideas, expresses assumptions.
Stage of work on the project	The content of the work at this stage	The student's activity	The activity of the teacher and the supervisor from the educational institution	Activities of the supervisor from the enterprise
Preparation/pre-investment stage of design	Definition of the topic and objectives of the project	Discuss the subject with the teacher, and supervisors from the university and the enterprise, receive additional information if necessary. Set research objectives	They introduce the meaning of the project and motivate the student. Assist in setting research objectives, course design	Helps in the search for an analogue project, its actualization to the set goals of research and course design
Planning	Definition of sources of information; b) ways of collecting and analyzing information; c) the way the results are presented (report form); d) procedures and criteria for evaluating results and processes; e) and distribution of tasks	a) Develop an action plan; b) ways of collecting and analyzing information; c) the way the results are presented (report form); d) procedures and criteria for evaluating results and processes; e) and distribution of tasks	Develop an action plan; Formulate research objectives	Offers ideas, expresses assumptions.

	(duties) between team members		
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Let us formulate the main tasks that must be solved by both the student and the analyst in practice when evaluating the effectiveness of investment projects:

1) Evaluation of the project feasibility – verification of the satisfaction of all really existing limitations of technical, environmental, financial and other nature. Usually, all restrictions, other than financial feasibility, are checked at the early stages of project formation. The financial feasibility of an IP is the provision of a cash flow structure in which at each step of the calculation there is sufficient money to carry out the project that generates this IP.

2) Evaluation of the potential feasibility of the project, its absolute effectiveness, according to which verification of the condition that the aggregate project results are no less valuable than the required costs of all types.

3) Evaluation of the comparative effectiveness of the project, which is understood as an evaluation of the advantages of the project in question compared to the alternative one.

4) Estimation of the most effective set of projects. In essence, this is the task of optimizing an investment project and it generalizes the previous three tasks. In the framework of this task, it is possible to carry out the ranking of projects, that is, the choice of the optimal project.

According to the "Methodological Recommendations"¹⁷, the effectiveness of the investment project is a category that reflects the project's relevance to the goals and interests of its participants, which are understood as subjects of investment activity and society as a whole¹⁸. During the evaluation of the design solution, the master's student should initially use both classical methods of economic analysis (comparison, balance, elimination, correlation-regression analysis, graphical, simple and compound interest, discounting, etc.), the UNIDO methodology -Manual for the Preparation of Industrial Feasibility Studies, and modern non-traditional approaches, theories and methods (the theory of multicriteria optimization in form of the concept of V. Pareto, the theory of fuzzy (diffuse) sets, the theory of reduced Cash Flow Stream, the theory of

¹⁷ Methodological Recommendations for Estimation of Efficiency of Investment Projects, 1999. Available: http://www.consultant.ru/document/cons_doc_LAW_28224/.

¹⁸ V. Berens, P.M. Khavranek, *Guide to the Preparation of Industrial Technical and Economic Research*. UNIDO, Vienna, 1995, p. 100.

expectations and behavioral economics¹⁹, risk models (VAR, volatility, K. Lorenz curve, operational and financial leverage, additive functions, "downfall"). That should serve as a starting point to develop their own creative approaches, methods or evaluation models²⁰.

The researches of a master's student in the field of modeling a criterial system for evaluating an investment project in terms of its social significance, the scale of its impact on the environment, the degree of involvement of labor resources, etc. should be attributed to the elements of the scientific novelty of the dissertation research, which should be sought by students. Except for using the results obtained in the theory and practice of project management by the investor/developer, the results of the thesis can be used in the educational process as theoretical and methodological materials for lectures, case studies, test tasks, business games, trainings, tasks for practical classes, etc., as well as for the preparation of scientific reports and articles²¹.

In conclusion, a master's student formulates generalized conclusions and proposals on the results of the solution of the tasks, suggestions and recommendations for improving the current systems for evaluating the effectiveness of the investment project, the regulatory and legislative framework in the field of contractual relations, pricing and urban development in the framework of investment or development projects, indicates the prospects for applying the results in practice from the point of view of commercial, budgetary and social effectiveness and scientific value of the problems being solved, possibilities for further research of the problem or other significance of the work.

Interactive technologies of project learning and universal knowledge in the program "Investment design and budget pricing in construction" in area 08.04.01 Construction allows the graduate to independently develop separate sections of the investment project and take a worthy position in the market of design, estimate and developer's services. Learning to work in viewpoint, respect for the dignity of a colleague/opponent, his/her right to freedom of speech, own opinion and attitude to their own work

¹⁹ A. Tversky, D. Kaneman, "Choices, Values, and Frames", in *American Psychologist*, 1984, vol. 39, no. 4, p. 345.

²⁰ E.L. Hasanov, V.D. Panachev, V.P. Starostin, A.G. Pudov, "Innovative approach to the research of some characteristics of choir scenes as culturology issue", in *Astra Salvensis*, 2018, vol. 6, no. 1, p. 749-759.

²¹ N.V. Buley, T.S. Demchenko, V.V. Bondaletov, N.F. Bondaletova, S.A. Makushkin, "Management policy promotion as element of complex of commercial organizations marketing", in *International Journal of Applied Business and Economic Research*, 2017, vol. 15, no. 12, p. 307-316.

results, life and professional skills in students. The apogee of the development of the master's program is the realization of students own competence in the period of practical training and then in employment²². Successful mastering of the program provides the master's student with the professional competences for solving tasks such as: defining the project objectives; preparation of the project justification based on the results of pre-investment studies; its structuring (sub-goals, subprojects, phases, etc.); determination of financial needs, sources of financing, level of financial feasibility of the project; selection of suppliers, contractors and other executors (on the basis of bidding and competitions procedures); preparation and establishment of contracts; calculation of the project budget; determination of project implementation deadlines and development of implementation schedule; control over the progress of the project at the stages of construction, installation and commissioning works; putting the object into operation; project risk management²³; ensuring control over the progress of the project; completion of the project and its liquidation.

The conducted research at the level of the needs of the market for investment and development projects and the obtained results of the feasibility of the project method in IPEPC outlined in this article will help a master's student to carry out research work that is practical oriented to the region's needs in the development and implementation of innovative or socially-directed projects, and the bachelor's graduate in area 08.03.01 Construction – to decide the choice: when the to go to the production or to continue further education as a master's student and multiply investment, intellectual and human potential of their own region.

²² M.V. Vinichenko, E.V. Frolova, E.E. Kabanova, M.S. Kozyrev, T.A. Evstratova, “The youth employment problems”, in *Journal of Advanced Research in Law and Economics*, 2016, vol. 7, no. 2, p. 378-387.

²³ D.A. Kaldiyarov, A.M. Baltabayeva, A.E. Bedelbayeva, “Competent role of anti-crisis management in the development of economy in the Republic of Kazakhstan”, in *Espacios*, 2017, vol. 38, no. 48, p. 20.