

ISSN 2695-0243
DOI 10.47451/col-027-2023



EUROPEAN SCIENTIFIC e-JOURNAL

ISSUE 27

DECEMBER 30, 2023



**ACTUAL ISSUES OF
MODERN SCIENCE**

GLOBAL SCIENCES IN THE NAME OF HUMAN DEVELOPMENT

EUROPEAN SCIENTIFIC E-JOURNAL

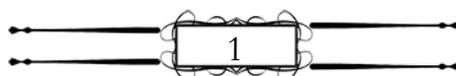
ISSN 2695-0243

ISSUE 27

ACTUAL ISSUES OF MODERN SCIENCE

DOI 10.47451/col-027-2023

Tuculart Edition
EU, Czech Republic
2023



Actual Issues of Modern Science. European Scientific e-Journal, 27.
Ostrava: Tuculart Edition & European Institute for Innovation Development, 2023. – 70 p.

DOI 10.47451/col-027-2023

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Table of Contents

Economics

<i>Medvedeva, N. K.</i> The essence and economic features of university innovation infrastructure formation	7
---	---

History

<i>Lebedev, S.</i> The evolution of the formation of the Vilna Province as part of the Russian Empire	28
---	----

Pedagogics

<i>Dimkova, R.</i> Contemporary education and concepts of leadership of the modern teacher	39
--	----

<i>Poghosyan, S., Eprikyan, A.</i> The system of modern methods and technologies as an effective means of implementing the educational function of teaching history	47
---	----

<i>Shefket, M.</i> Establishing several features in the training of football referees in the Republic of Bulgaria	57
---	----

Authors	65
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Citations in APA	67
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The essence and economic features of university innovation infrastructure formation

Abstract: In modern conditions, universities perform research activities not only for the development of fundamental science but also for the practical use of applied research results and their integration with the regional and national economy. There is a need for innovative competencies formation aimed at the formation of innovative thinking among students and employees of higher educational institutions. Practically directed scientific research is being integrated into the educational process, and a technology transfer center is being created between the scientific and educational departments of the university. The study purpose is to analyse university innovation infrastructure concept and consider its formation economic features. The scientific novelty of the study results lies in the systematisation of approaches to defining the university innovation infrastructure concept. The concept basis is a set of mechanisms and systems ensuring the innovative university activities. The theoretical foundations of university innovation infrastructure formation and development, its elements and subsystems composition and functionality at the desk study level are analysed. In this process, the key focus is on the economic features of innovative infrastructure formation and its economic effectiveness assessment. In the study course, such methods as comparison, generalisation, comparison, abstraction, deduction, and induction were used. To achieve the study purpose and solve the tasks set, the works of J. Yuti, F. Shapiro, N.N. Pogrebnyak, N.P. Khveseni, V.V. Sokolova, A.M. Nosonov, A.V. Rumyantseva, and I.P. Mitrofanova were used.

Keywords: university innovation infrastructure, business incubator, innovative university activities, innovation infrastructure elements.



Сущность и экономические особенности формирования инновационной инфраструктуры университета

Аннотация: В современных условиях университеты осуществляют научно-исследовательскую деятельность не только для в целях развития фундаментальной науки, но и для практического использования результатов прикладных исследований и их интеграции с региональной и национальной экономикой. Возникает потребность в формировании инновационных компетенций, направленных на формирование новаторского мышления у обучающихся и работников высшего образовательного учреждения. В образовательный процесс встраиваются практически направленные научные исследования, создается центр трансфера технологий между научными и учебными подразделениями университета. Целью статьи является анализ понятия инновационной инфраструктуры университета и рассмотрение экономических особенностей её формирования. Научная новизна результатов исследования состоит в систематизации подходов к определению понятия университетской инновационной инфраструктуры. Основой данного понятие является совокупность механизмов и систем, обеспечивающих инновационную деятельность университета. Проанализированы теоретические основы формирования и развития инновационной инфраструктуры университета, состав и функционал её элементов и подсистем на уровне камеральных исследований. Ключевой акцент в данном процессе сделан на экономические особенности формирования инновационной инфраструктуры и экономическую оценку её эффективности. В ходе исследования были использован такие методы как сравнение, обобщение, сопоставление, абстрагирование, дедукция и индукция. Для достижения цели

решения поставленных задач были использованы работы Ж. Юти, Ф. Шапиро, Н.Н. Погребняка, Н.П. Хвесени, В.В. Соколовой, А.М. Носонова, А.В. Румянцевой и И.П. Митрофановой.

Ключевые слова: инновационная инфраструктура университета, бизнес-инкубатор, инновационная деятельность университета, элементы инновационной инфраструктуры.



Abbreviations:

IAR – intellectual activity results,

ISTC – innovative scientific and technological centers.

Introduction

At the present global economic development stage, the university is involved in the innovation activities of a region or country through interaction with government agencies and representatives of the private sector of the economy. It is necessary to modernise traditional methods of conducting scientific research and development to accelerate the latest technologies transfer created on a university basis and to the innovative goods, works, and services market. According to the new conditions, new departments are being formed at universities to implement their innovation activities.

The university innovation infrastructure is a method of organising and implementing innovative university activities. It consists of several subsystems providing various kinds of services. Budget subsidies are the main source of financing for creating and operating university innovation infrastructure. From an economic viewpoint, it is necessary to consider the cost ratio of creating an innovation infrastructure at the university with the proceeds from the sale of innovative goods, works, and services developed within the framework of the elements of this structure. It is necessary to assess the economic feasibility of forming an innovation infrastructure within each university individually.

Having become a participant in the innovative economy, the university participates in government projects, providing its innovative resources and developments. Universities also attract private investors to implement joint innovative projects. At the same time, university departments created to perform innovative activities allow students to create innovative business projects and provide them with assistance in obtaining support measures.

The stated provisions indicate the study topic's relevance.

The study purpose is to consider the concept and features of the formation and development of university innovation infrastructures in Russia and foreign countries.

The study object is the innovation of higher school sector activities.

The study subject is the university innovation infrastructure in Russia and abroad.

The scientific novelty of the study results lies in the systematisation of approaches to defining the university innovation infrastructure concept. The concept basis is a set of mechanisms and systems that ensure the innovative university activity. The theoretical foundations of the university innovation infrastructure formation and development, its elements and subsystems composition and functionality at the desk study level are analysed. In this

process, the key focus is on the economic features of innovation infrastructure formation and its economic effectiveness assessment.

In the study course, such methods as comparison, generalisation, comparison, abstraction, deduction and induction were used.

To achieve the study purpose and solve the tasks set, the works of J. Utii, F. Shapiro, N.N. Pogrebnyak, N.P. Khveseni, V.V. Sokolova, A.M. Nosonov, A.V. Rumyantseva and I.P. Mitrofanova were used.

The results of the study

Currently, the term “innovation infrastructure” is entrenched in the scientific literature to a greater extent in relation to national and regional structures. The works of scientists and researchers consider various approaches to the essence of innovative university activity. For example, N.N. Pogrebnyak considers one of the key functions of universities the involvement of students in research activities, which is conducting research aimed at obtaining new knowledge, just like its subsequent systematisation and practical application (*Pogrebnyak, 2019*). N.P. Khveseniya focuses on assessing the commercial significance and protecting the rights to the results of innovative activities, just like attracting investors (*Khveseniya, 2018, pp. 84-86*). V.V. Sokolova divides innovation infrastructure into tangible and intangible (*Sokolova, 2014*). A.M. Nosonov considers the university innovation infrastructure as a set of management systems, information technologies and financing sources (*Nosonov, 2019*). A.V. Rumyantseva suggests various approaches to assessing the effectiveness of innovation infrastructure subjects’ activities (*Rumyantseva et al., 2017*). I.P. Mitrofanova offers a university innovation infrastructure effectiveness assessment based on coefficients (*Mitrofanova & Zakharova, 2017*).

In modern conditions, the digital transformation of all public life spheres is intensifying, which, in turn, leads to the digitalisation of educational processes and research activities in the process of forming a new innovative university development model. The life cycle of a higher education system based on a research model is coming to an end. There is a need to improve the existing university management system, leading to the issue of higher educational institutions’ transformation into a space for innovation and the development of new business lines.

The innovative university model, undergone transformation according to the global challenges of our time, consists of four main blocks presented in the article appendix (*Table 1*).

So, having considered it, the author concludes that the innovative university transformation represents integrating innovative activities process into the core university activities, just like the creation of new management systems to ensure the sustainable functioning of higher education institutions in the face of modern challenges.

Research activities are worth distinguishing from innovative university activities. If the first is aimed primarily at obtaining new knowledge, then the second aims at the subsequent commercialisation of this knowledge.

The university’s research activities include:

- fundamental scientific research – obtaining new knowledge about the basic laws of the functioning and development of nature and society;

- applied scientific research aimed primarily at applying new knowledge to solve specific problems;
- exploratory scientific research – scientific research focused on the practical application of the acquired knowledge (*Garanin & Sandler, 2020*).

The innovative university activity includes scientific, technical, organisational, financial, and commercial activities aimed at implementing innovative projects and creating innovation infrastructure.

The term innovation is based on the Latin word “innovationem”, meaning “to change” or “to modernise” in English. The innovation essence is renewal based on changing the way decisions are made and abandoning the usual methods (*Ivashchenko, 2020*). Innovation serves as a bridge between science and entrepreneurship.

The innovative university development is a purposeful process of forming the innovative higher educational institution potential to develop scientific, technical, and entrepreneurial activities aimed at obtaining significant results for the innovation national economy development and strengthening the university’s position (*Yurchenko, 2019*).

The innovative university development is characterised by innovation introduction in all areas of the university activities to increase the university competitiveness at the regional, national, and global levels. The following conditions that are necessary for the innovative development of the university are identified:

- free interaction of subjects of innovative activity;
- availability of resources for research and entrepreneurial activities;
- consideration of the mutual interests of participants in innovation activities;
- practical usefulness of potential results of innovative activity (*Yurchenko, 2019*).

The main objectives of innovative university development are:

- introduction of innovations in educational activities;
- motivation of staff and students to conduct scientific research;
- interaction with external actors within the framework of scientific activities;
- introduction of innovations in the promotion of educational services on the foreign and international market;
- attracting investors to finance the innovative activities of the university;
- formation and development of the innovation university infrastructure;
- development of information technology support for the University (*Yurchenko, 2019*).

Next, it is necessary to consider the definitions of the term “innovative infrastructure”, presented by various authors, to derive the concept of “university innovation infrastructure”, which will be used in this research work. The main approaches to the definition of the “innovation infrastructure” concept are presented in the appendix to the article (*Table 2*).

Based on the definitions of the term “innovation infrastructure” presented in Table 2, the author concludes that, in general, innovation infrastructure is a set of institutions that support innovation activities.

Thus, within the framework of this research work, based on the definitions presented in Table 5, the “university innovation infrastructure” concept is derived, presented as follows: a set of organizational and managerial, logistical, financial, personnel, and information systems of

the university interacting throughout the period of scientific knowledge transformation into the final innovative product and ensuring the innovation activities implementation.

Functional subsystems reflecting the essence of the university innovation infrastructure are presented in the article appendix (*Table 4; Table 5*).

The university innovation infrastructure elements ensure the innovative university activities. The university innovation infrastructure development and implementation is to maintain and develop the scientific and logistical university potential. It is worth noting that the university innovation infrastructure can be considered as information and communication support for innovation activities in higher educational institutions of the humanities.

In a broad sense, V.V. Sokolova identifies two types of innovation infrastructure – tangible (technoparks, business incubators, technical and innovation centers, technology transfer centers, etc.) and intangible (intellectual property protection services, intellectual product promotion services, outsourcing, etc.) (*Sokolova, 2014*).

In a narrower sense, the following fundamental elements of the university innovation infrastructure can be distinguished:

- innovative educational programmes;
- scientific and production facilities (business incubators, technology parks, laboratories, etc.);
- small innovative enterprises (MIPS);
- university departments, whose activities are aimed at supporting innovation activities;
- structures that ensure the innovation activities management (*Sokolova, 2014*).

Another approach to determining the composition of the university innovation infrastructure is proposed by S.V. Valdaytsev, N.N. Molchanov and K. Petsoldt. In their work, scientists consider innovative infrastructure as the primary basis and tool for developing its innovative potential. In this case, the innovation infrastructure will include the following elements:

- problem-oriented small innovative firms whose activities are aimed at solving scientific and industrial problems;
- innovative structures that promote the commercialisation of the results of scientific and technical activities;
- incubator of small enterprises;
- a system for training managers (*Valdaytsev et al., 2013*).

The essence of some of the above-mentioned elements of the university innovation infrastructure is presented in the article appendix (*Table 4*).

It is worth noting that it is customary to distinguish between full- and incomplete-cycle business accelerators. The former supports the functioning of projects differing in life cycle stages, including projects that are just emerging. Incomplete business accelerators work with already proven projects already backed by a registered legal entity, a working team, or some working prototype (*On Innovative..., 2017*).

ISTC activities are regulated by Federal Law No. 216-FZ. The innovative scientific and technological centre territory means a set of land plots or parts thereof operating in a specific

legal regime intended for implementing the project and included in the innovative scientific and technological centre territory boundaries (*On Innovative..., 2017*).

The innovative scientific and technological center includes buildings, structures, and objects of communal, social, and transport infrastructure.

Yu.V. Daneikin and O.P. Ivanova propose to evaluate the university's contribution to the ISTC creation and development using the following indicators:

- the number of high-tech jobs created with the participation of the university ISTC;
- increase in the volume of total revenue of the participating ISTC companies;
- the number of people enrolled in the university's continuing education programmes designed to meet the needs of the ISTC for specialists;
- the number of patent applications of the participating ISTC companies;
- the share of participating enterprises' products exports in the total volume of products shipped, works performed, and services rendered;
- increasing the number of intellectual property objects;
- the share of the products of the high-tech and knowledge-intensive industries ISTC in the gross regional product of the region;
- the share of new and improved high-tech products in the total volume of shipped products;
- the ratio of actual and target values of successfully implemented and stably functioning innovative projects of industrial enterprises with the university support;
- technological readiness coefficient – an indicator characterising the readiness of an enterprise for innovation, for introducing and developing innovative technologies and modernising production;
- the production readiness level of the ISTC participant's projects, developed with the participation of the university (determines the readiness to create a product production from the layout level to the industrial sample and shows the creation of effective production (experimental, pilot, serial)) (*Daneikin & Ivanova, 2020*).

The elements of various innovation infrastructures of some Russian universities are presented in the article appendix (*Table 3*).

Based on the data in the appendix, the author can conclude that the Russian universities under consideration have similar innovation infrastructures; their elements include technoparks, collective use centres, business incubators, technology transfer centres and small innovative enterprises created based on the university.

In the Russian Federation, the most well-known business accelerator was created at Moscow State University. It is part of the innovative scientific and technological centre of Moscow State University "Vorobyovy Gory". Residents are provided with seed investments, access to the business incubator infrastructure and assistance in developing a business model. Participation in the startup development programme lasts four weeks. However, it is worth noting that you can use the services of a business accelerator if you only have an idea.

The combination of university innovation infrastructure contributes elements to the creation and development of small innovative enterprises established on a university basis, just like the implementation of innovative university activities, thereby ensuring the functioning of the academic entrepreneurship system.

Small innovative enterprises are the general academic entrepreneurship system element. Under a small innovative enterprise, it is customary to designate an economic company created by an educational or research institution with joint participation with a private partner. Its activities are aimed at introducing innovative activity results to the market (*Gubin & Lakhno, 2017*). It is customary to refer to small innovative enterprises as knowledge-intensive organisations operating in innovative technologies.

The Strategy for the Development of Science and Innovation in the Russian Federation for the Period up to 2015 presents a small innovative enterprise concept. In the specified regulatory framework, this term refers to a small enterprise. Its activities are aimed at performing works or providing services to create new or improved products, just like the modernisation of production processes (*Strategy..., 2006*).

Also, the definition of a small innovative enterprise is presented in paragraph 2 of the Recommendations on Ensuring Coordination of Programmes Implemented for State Support of Small and Medium-Sized Businesses, Promoting Self-Employment of Unemployed Citizens, Supporting Small Forms of Farming in Rural Areas and Supporting Small Forms of Innovative Entrepreneurship. In this regulatory legal act, a small innovative enterprise is defined as a legal entity operating in the small or medium-sized enterprise form and performing activities for producing innovative goods or providing innovative services. The core condition for classifying an organisation as a small innovative enterprise is the implementation of costs for technological innovations (*Recommendations..., 2011*).

At this moment, an exhaustive list of regulatory legal acts regulating the activities of small innovative enterprises established at universities has not yet been created.

The basic list of normative legal acts regulating innovation activities in the Russian Federation as a whole includes the Constitution of the Russian Federation, the Civil Code of the Russian Federation, the Tax Code of the Russian Federation and Federal Law No. 39-FZ “On Investment Activities in the Russian Federation Performed in the Form of Capital Investments”.

The regulatory system and legal regulation of small innovative enterprises established based on higher educational institutions are presented in the article appendix (*Table 5*).

In addition, according to Law No. 209-FZ (*On the Development..., 2007*), at least one of the following must be performed to classify an organisation as a small enterprise conditions:

1. For business companies, business partnerships, and business partnerships, at least one of the following requirements must be met:

- the shares of the organisation traded on the securities market belong to the shares of the high-tech sector;
- the main activity of the organisation is the introduction of innovative activity results to the market;
- the status of a participant in the Skolkovo Innovation Center project;
- the organisation providing state support for innovation activities is the founder or participant of a business company;
- if the organisation is a public joint-stock company, at least 50% of its shares must be owned by the state;

- the organisation was created in the form of a state corporation;
- the organisation was created through the reorganisation of the Russian Nanotechnology Corporation.

2. The average number of employees for the previous calendar year of business companies, business partnerships, and business partnerships that meet one of the requirements:

- up to 100 people for small enterprises (microenterprises stand out among small enterprises – up to 15 people);
- from 101 to 250 people for medium-sized enterprises.

3. The organisation's income received from entrepreneurial activity for the previous calendar year should not exceed the limits established by the Government of the Russian Federation for each category of small and medium-sized businesses.

The procedure for creating a small innovative enterprise consists of the following steps (*On Science..., 1996*):

- the management of an educational or research institution decides on the creation of a small innovative enterprise;
- registration of the intellectual property right to innovation and calculation of its cost;
- collection and preparation of documents necessary for registration of a small innovative enterprise, including constituent documents, license agreement, minutes of the general meeting, etc.;
- registration of a legal entity;
- notification of the Ministry of Education and Science on small innovative enterprise establishment (*Small innovative enterprise..., 2023*).

State support for the activities of small innovative enterprises established at universities is performed in the following areas:

- financing the innovative infrastructure facilities development;
- legal protection of innovation activity results;
- development and implementation of training and advanced training programs for personnel engaged in the innovation sector;
- internship and professional development of personnel;
- consulting services (*Small innovative enterprise..., 2023*).

It is worth noting that the existing regulatory framework governing the activities of small innovative enterprises regulates their definition and concept to a greater extent than business activities, sources of financing and functioning features.

State support for creating and developing the university innovation infrastructure consists of providing financial resources in the following areas:

- creating and developing innovative infrastructure facilities in universities, just like their equipment with modern equipment and software;
- legal protection of the IAR;
- evaluating the IAR;
- implementing and developing targeted training and advanced training programmes in small innovative entrepreneurship;

- developing educational, methodological, scientific and methodological support for small and medium-sized businesses;
- internship and advanced training of university staff in foreign universities to apply positive experience in the formation and development of innovative infrastructure;
- consulting services of Russian and foreign experts in technology transfer;
- creating and developing small innovative enterprises (*On State Support..., 2010*).

In these areas, budget allocations are provided on a competitive basis based on the results of innovative infrastructure development programme selection. In the Russian Federation, universities performing fundamental and applied scientific research in priority areas of science, technology and technology development can participate in the competition (*On State Support..., 2010*).

The core indicators for evaluating the implementation of the university innovation infrastructure development programme include:

- the complexity of the created innovative infrastructure of the educational institution and the amount of work and services performed on its basis;
- an effective IAR registration and accounting system;
- the number of reeds accepted for budget accounting;
- the number of legal entities created by an educational institution that contributes to the practical innovative product implementation;
- the number of jobs in the created innovation infrastructure and legal entities described above;
- the number of students, postgraduates and representatives of the teaching staff involved in the work of these persons;
- the number of ongoing projects supported by the Fund for Assistance to the Development of Small Enterprises in the Scientific and Technical Field and other organisations, just like the amount of extra-budgetary funds raised;
- the volume of research and development work performed in an educational institution;
- the number of trained and qualified innovation-oriented representatives of small and medium-sized innovative businesses according to programmes developed in an educational institution;
- the number of faculty and staff who have completed internships and advanced training programmes in innovative entrepreneurship and technology transfer based on innovative infrastructure facilities of leading foreign universities;
- the volume of high-tech products created using innovative educational institution infrastructure elements (*On State Support..., 2010*).

However, innovative infrastructure is worth creating at universities, regardless of their profile. The social sciences and humanities are not represented in the priority areas of the Russian Federation's science and technology development, and, therefore, universities of this profile cannot participate in the above-mentioned competition.

At the same time, creating a business incubator based on the University of Social Sciences and Humanities would increase the implementation of innovative services developed in this

industry. It is advisable to add additional indicators related to the provision of intangible innovative services to the assessment indicators listed above.

According to T.V. Mirolyubova and P.A. Sukhanova, the cost-effective innovative infrastructure of the Russian university is worth forming in the context of the following four directions:

1. Stimulating university research through the creation of an R&D marketing department aimed at providing assistance in obtaining grants and finding business partners for promising projects.
2. Ensuring technology transfer through the creation of an appropriate office related to the management of the university's intellectual property created in its laboratories, in terms of preparing documentation and providing financial, legal and marketing services. In addition, within the framework of this direction, it is proposed to create an experimental production centre at technical universities, whose activities are related to the provision of services for the development of design, regulatory, technical and operational documentation, just like the creation of experimental products and prototypes of an innovative product. The authors consider the creation of a collective centre for experimental production, whose services can be used by several universities, to be the most appropriate.
3. Development of entrepreneurial abilities. Within the framework of this direction, it is proposed to create a club of entrepreneurs providing educational services and mentoring support, just like mediation in attracting investors' process.
4. Stimulating entrepreneurial activity within the framework of a range of services provided by the university business incubator (*Mirolyubova & Sukhanova, 2013*).

In addition to the listed areas, it is necessary to add a direction for implementing scientific and practical projects by creating small innovative enterprises based on universities. Participation in the distribution of profits from the activities of small innovative enterprises will increase the economic effect of the university's investments in forming and developing innovative infrastructure.

D.Y. Mironova believes that forming the university innovation infrastructure is worth considering from the viewpoint of innovative projects' development and commercialisation. Therefore, the main focus is on creating the university's project office and technology transfer centre.

One of the core goals of creating a project office at the university is to conduct project-oriented management aimed at obtaining cost-effective results from promoting ideas to the market. The implementation of research projects created at the university is aimed at further IAR commercialisation (*Mironova, 2023*).

Technology transfer centre activities are significant for building long-term cooperation between scientific organisations, and universities with industrial enterprises. They solve the tasks of finding orders and introducing university developments into the real sector of the economy, just like from the agenda of applied research (*Chernyshenko, 2023*). Technology transfer centres are focused on building long-term cooperation between universities and scientific organisations with enterprises in the real sector of the economy.

The mechanism for developing technology transfer centres was launched in 2021 as part of the federal project “Development of Large-Scale Scientific and Technological Projects in Priority Research Areas” of the national project “Science and Universities”.

When forming the university innovation infrastructure, it is advisable to use qualitative criteria for evaluating the regional innovation systems’ effectiveness, including the following indicators:

- the degree of regional economy readiness for introducing innovations;
- the amount by which each unit of investment in science and education increases the size of the gross regional product on average;
- the time interval during which innovations, just like professional development, have an impact on the gross regional product size;
- increase in the share of intangible assets in the total asset structure of the organisation;
- the growth of investments in the labour reproduction;
- the amount of absolute savings in working time due to increased labour productivity;
- the service sector’s predominance in the overall gross regional product structure (*Sukhanova, 2012*).

P.A. Sukhanova, based on the analysis of the financial results of US universities’ innovation activity, identifies the following indicators of the economic efficiency of the university innovation infrastructure:

- the amount of financial support for scientific research;
- the number of registered inventions;
- the number of patents;
- the number of technologies released to the market that have generated revenue;
- the number of licenses issued;
- the total amount of royalties received;
- the number of startups;
- income from the sale of shares in the ownership of startups (*Sukhanova, 2012*).

It is advisable to supplement this list with such indicators as “the number of ‘surviving’ startups”, “the number of income-generating small innovative enterprises”, “the number of business partners of the university” and “the share of innovative products of the university in the total volume of innovative goods, works and services”. The new indicators will provide more information about the economic impact of the innovative university activities, just like allowing the assessment of the availability of university partnerships that contribute to its intellectual activity results commercialisation.

At the same time, it is worth noting that the listed indicators of economic efficiency are more related to technical areas, which corresponds to the priority areas of the Russian Federation’s science, technology and technology development. Innovation activity regulation in the social and humanitarian sphere is less developed since the short-term economic effect in this industry is almost difficult to determine, and the medium-term one is inferior to the technical sphere since the vast majority of such projects are designed for the future, i.e., they are long-term.

It is advisable to supplement the above indicators with criteria for assessing economic efficiency in the social and humanitarian sphere:

- the number of copyright objects created in the university department;
- the number of income-generating implemented social and humanitarian projects;
- the number of innovative services users;
- the methods of promoting innovative services and the effectiveness of their application;
- the number of private investors who financed social and humanitarian projects;
- the annual revenue amount ratio to the volume of investments, both for the reporting period and incrementally, to last year, considering the project implementation plan.

At the present stage of economic development, Russian universities of the social and humanitarian profile are creating clubs of entrepreneurs and business accelerators that provide consulting, just like logistical services for student innovation project development. Communication platforms are being developed for the exchange of various participants' practices.

To improve the economic efficiency of university innovation infrastructure, according to I.V. Titovich, it is necessary:

- develop and approve a regulatory legal act providing for creating endowment funds in universities (endowment fund), i.e., a part of the property of a non-profit organisation formed and replenished by donations, property received by will, just like by unused income from the trust management of the specified property and transferred by a non-profit organization to the trust management of a company to generate income used to finance the statutory activities of such a non-profit organisation or other non-profit organizations (*On the Procedure...*, 2006);
- review the legislative framework to expand the capabilities of customers to participate in forming modern and innovative educational, scientific and laboratory facilities at universities;
- stimulate the domestic manufacturers' interest in purchasing technologies and patents for producing products from universities (*Titovich, 2019*).

The coefficients presented in the appendix to the article (*Table 6*) can be used to assess the university innovation infrastructure effectiveness.

The coefficients presented in Table 6 make it possible to assess the profitability and profitability of the innovative infrastructure, the growth rate of its development and the potential of personnel. From the viewpoint of the economic efficiency of the innovative infrastructure, the IAR commercialisation coefficient and the IAR creation efficiency coefficient are of the greatest interest. These coefficients allow you to estimate the return on invested funds. The growth coefficient, involvement coefficient, and human resource potential coefficient can be used to economically assess the innovative infrastructure quality.

The presented coefficients can be supplemented with indicators characterising the various innovation stages' cost-effectiveness:

1. Cost-effectiveness of the R&D stage [34]:

$$CE_{R\&D} = \frac{\sum_{i=1,t=1}^{NT} H_{it} + \sum_{j=1,t=1}^{KT} H_{jt}}{\sum_{r=1,t=1}^{RT} H_{rt} - \sum_{q=1,t=1}^{QT} H_{qt} - \sum_{t=1}^T (H_2 - H_1)}, \quad (1)$$

N is the number of independently developed innovations;

K is the number of intellectual property objects acquired;

R is the total number of innovations as R&D result and intellectual property acquisition in the external environment;

Q is the number of intellectual property objects of R&D results implemented in the external environment and not used in the activity of the subject;

H_{it} is the cost of resources in monetary terms for the independent creation of the i^{th} innovation in t year;

H_{jt} is the cost of acquiring the j^{th} intellectual property object in the external environment for t year;

H_{rt} is total actual R&D costs and intellectual property acquisition in the external environment in t year;

H_{qt} is profit from the implementation of q innovations in the external environment in t year;

H_1 is incomplete studies at the beginning of the analysed period in value terms;

H_2 is incomplete studies at the end of the analysed period;

T is the number of analysed period years.

2. Cost-effectiveness of IAR development (implementation) stage ([Rumyantseva et al., 2017](#)):

$$CE_{IS} = \frac{\sum_{i=1, t=1}^{NT} C_{it}}{\sum_{j=1, t=1}^{NT} C_{jt}}, \quad (2)$$

N is the number of implemented innovations (inventions, technical solutions, ideas);

K is the number of developed innovations (inventions, technical solutions, ideas);

C_{it} is the cost of resources for the development of the i^{th} implemented innovation (invention, technical solution, idea) for t year;

C_{jt} is the cost of resources for the development of the j^{th} innovation (invention, technical solution, idea) for t year;

T is the number of analysed period years.

3. Cost-effectiveness of innovation activities ([Rumyantseva et al., 2017](#)):

$$CE_{IA} = CE_{R\&D} \times CE_{IS}, \quad (3)$$

$CE_{R\&D}$ is cost-effectiveness of the R&D stage;

CE_{IS} – cost-effectiveness of the invention implementation stage.

An economic assessment of the university innovation infrastructure quality as a set of individual properties, characteristics, and functions of an object is, on the one hand, an assessment by the university of the economic costs of creating and operating an innovation infrastructure and a possible economic effect, on the other hand, an assessment by consumers of the costs of using innovative infrastructure services and the degree of satisfaction of their needs ([Petron, 2020](#)).

The following methods can be used for the economic assessment of quality:

- registration method based on systematic observations and fixation of the number of some events or objects with their subsequent statistical processing (manufacturability, efficiency, unification (standardization), patent and legal indicators, etc.).

- calculation method based on the use of formulas, just like theoretical or empirical knowledge about the dependence of quality indicators on various parameters of a product or service (*Methods...*, *n.d.*).

Conclusion

Thus, the innovative university transformation is a response to the global challenges of modernity, due to the obsolescence of the research model of higher educational institutions. The core significance is acquired by the innovative university development, which is the process of introducing innovations to develop scientific, technical and entrepreneurial activities to ensure the university's competitiveness and national welfare growth. The innovative university development takes place in close cooperation with external organisations, ensuring innovation development and implementation.

The university innovation infrastructure is a set of mechanisms and systems ensuring the innovation institution's activity. The innovation infrastructure elements include innovative educational programmes, research and production facilities, small innovative enterprises, and university departments whose activities are aimed at supporting innovation activities and structures ensuring innovation activities management. Large Russian universities have similar innovative structures, including technoparks, collective use centres, business incubators, technology transfer centres and small innovative enterprises established based on the university. The university innovation infrastructure development contributes to strengthening academic entrepreneurship by providing the necessary resources.

Academic entrepreneurship is a new form of interaction between science and business aimed at the introduction and subsequent commercialisation of innovations. A new market for innovative educational services is emerging. A key element in the system of academic entrepreneurship is a small innovative enterprise established at the university. At this stage of society's development, the legal regulation of academic entrepreneurship is insufficiently developed. The main normative legal acts regulating the activities of small innovative enterprises are federal laws, resolutions of the Government of the Russian Federation and an order of the Ministry of Education and Science of the Russian Federation.

The main economic feature forming the university innovation infrastructure is that at this economic development stage in the Russian Federation, the general financing source for innovation activities is budget subsidies on a competitive basis. However, in the medium term, universities should strive to obtain additional financial resources from IAR commercialisation to ensure further R&D development, increasing their funds. Also, the main features to form the university innovation infrastructure include stimulating university research, entrepreneurship and technology transfer, the creation of project offices and small innovative enterprises.

When forming an innovation infrastructure, it is necessary to consider and the economic capabilities of the university, both the state of the regional and national economies, their readiness to introduce innovations. Regulatory legal acts regulating this area are worth reviewing to improve the mechanism of innovative activities implementation. In addition, it is necessary to encourage domestic producers to create research and production clusters using the research university potential. It is also possible to attract universities' research resources to solve business problems.

To assess the economic efficiency and quality of functioning the university innovation infrastructure, indicators such as the amount of financial support for scientific research, income from the sale of shares in the ownership of startups, the number of registered inventions, patents, startups, technologies, licenses and royalties received can be used. At the same time, to assess profitability and human resources, the IAR commercialisation coefficient, IAR creation efficiency coefficient, growth coefficient, involvement coefficient, and human potential coefficient, just like indicators of various innovation stages cost-effectiveness.



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Appendix

Table 1. Model of an innovative university

Name of the block	Content
Education and research	The basic block represents the main university's activity, supports the sustainable existence and functioning of the university.
Innovations	An innovation management system that stimulates innovation activities within the university.
Transformation	The university's management system, responsible for establishing the relationship between research and university's innovation activities.
Strategic management	This unit is responsible for forecasting the university's activities, preparing it for new transformations and developing strategic development plans.

Resource: *Garanin, 2019*.

Table 2. Approaches to innovation infrastructure definition

Source	Definition of "innovation infrastructure" concept
1	2
On Science and State Scientific and Technical Policy. Federal Law No. 127-FZ dated August 23, 1996	A set of organizations contributing to the implementation of innovative projects, including the provision of managerial, logistical, financial, information, personnel, consulting, and organizational services (<i>On Science..., 1996</i>).
On the Concept of Long-term socio-economic Development of the Russian Federation for the period up to 2020. Decree of the Government of the Russian Federation No. 1662-r dated November 17, 2008	A set of interacting organizations engaged in the production or commercial sale of knowledge and technologies, just like a complex of legal, financial and social institutions (<i>On the Concept..., 2008</i>).
K.Y. Kulakov, N.G. Verstina, T.S. Meshcheryakova	A set of elements systematized into five subsystems (financial, production and technological, information, personnel, expert consulting), and supporting innovative activities (<i>Kulakov et al., 2022</i>).
G. Schienstock, T. Hamalainen	A set of institutions and mechanisms functioning to ensure the knowledge transformation process including the following stages such as acquisition, production, dissemination, standardisation, application, and further optimisation (<i>Schienstock & Hämäläinen, 2001</i>).
J. Youtie, F. Shapiro	A structure that ensures the interaction of components of the external and university's internal environment to manage and coordinate innovative activities (<i>Youtie & Shapiro, 2008</i>).
M.F. Zozulya, S.V. Khakhanova	A specific complex of interacting systems and organisational elements having a multilevel structure and covering the entire period of scientific, scientific, technical and innovative activities (<i>Zozulich & Khakhanov, 2017</i>).
M.Z. Ilchikov	A set of scientific and technical, educational, industrial, technological and innovative organisations ensuring the implementation of innovative activities (<i>Ilchikov, 2021</i>).

A.M. Nosonov	a set of management systems, institutions, information technologies, research and educational institutions and sources of financing that create prerequisites for realising regional innovation potential (<i>Nosonov, 2019</i>).
R.V. Komisaruk	a set of organisations whose activities are aimed at providing support for scientific and scientific-technical activities, just like providing support for the implementation of innovative projects including the provision of managerial, logistical, financial, information, personnel, consulting and organizational services (<i>Komisaruk, 2022</i>).

Resource: Author's research on scientific articles.

Table 3. Functional subsystems of the university innovation infrastructure

Subsystem	Functions	Structure
Financial	Managing the university's financial flows	Financial institutions and funds
Material and technical	Providing the material resources and technological base	Technoparks, business incubators, technology transfer centers, innovation and technology centres
Personnel	Training of highly qualified personnel capable of working in an innovative environment	Innovative educational programmes and advanced training courses within the university
Information	Ensuring access to information resources and their free exchange	Software, Internet resources, information centres, hardware
Organisational and managerial	University innovation management	University departments

Resource: *Onishchenko, 2020, pp. 27*.

Table 4. The essence of the main elements of the university innovation infrastructure

Element	Essence
Technopark	A scientific and industrial territorial complex, whose activities are aimed at creating a favourable environment for innovative enterprises development (<i>University, 2023</i>). The technopark includes research institutes, industrial facilities, business centers, exhibition grounds, educational institutions, and service facilities.
The Collective Use Center	A university division created to ensure the collective use of expensive, unique devices and installations by structural university divisions.
Business Incubator	An organisation whose activities are aimed at supporting newly established and developing innovative companies through the provision of a full range of services, including office space, equipment, legal, and consulting services.
Business Accelerator	It is a model of support for a developing business to accelerate the qualitative development of the project. This model offers office space, consultations, trainings, legal, and accounting support, mentoring, information, logistics and PR support. Also, within the framework of the business accelerator, cycles of lectures, seminars, trainings and master classes can be held aimed at the formation of special knowledge, skills and abilities. The key function of the business accelerator is to provide financial support to a business that is just starting to function.

Technology Transfer Center	A university division created with the aim of commercialising the results of scientific research and development obtained by research institutes.
Innovative Scientific and Technological Center (ISTC)	A set of organisations engaged in scientific and technological activities and other persons ensuring the functioning of such a center operating on a territory determined by the Government of the Russian Federation (<i>On Innovative..., 2017</i>).

Resource: Author's research.

Table 5. The system of small innovative enterprises regulatory and legal regulation

Regulatory document type	List of regulatory documents	Scope of regulation
Federal Law	The Constitution of the Russian Federation, the Civil Code of the Russian Federation, the Tax Code of the Russian Federation	Basic regulation of innovation activity in the Russian Federation
Federal Law	On Investment Activities in the Russian Federation Performed in the Form of Capital Investments. No. 39-FZ On the Development of Small and Medium-Sized Enterprises in the Russian Federation. No. 209-FZ	Criteria for classifying organisations as small or medium-sized businesses
Federal Law	On Education in the Russian Federation. No. 273-FZ On Science and State Scientific and Technical Policy. No. 127-FZ	Regulation of the establishment of small innovative enterprises at universities, just like their subsequent activities' regulation
Resolution of the Russian Federation Government	On State Support for the Development of Innovation Infrastructure in Federal Educational Institutions of Higher Professional Education. No. 219	State support for small innovative entrepreneurship in universities to create an innovative environment
Order of the Russian Federation executive authority	On the Organisation of Work in the Ministry of Education and Science of the Russian Federation on the Registration of Notifications on the Creation of Business Companies and Business Partnerships. Order of the Ministry of Education and Science of the Russian Federation No. 43.	Regulates the accounting of business entities established at higher educational institutions

Resource: Author's research.

Table 6. Coefficients for evaluating the innovation infrastructure effectiveness

The coefficient name	The coefficient content	Formula	Symbols
IAR commercialisation coefficient	Assessment of the IAR demand in the market	$C_c = \frac{n_{iar}}{N_{iar}}$	C_c is IAR commercialisation coefficient; n_c is the number of commercialised IARs of the reporting period; N_c is the total number of IARs of the reporting period.
Efficiency factor of IAR creating	Evaluating the effectiveness of IAR commercialisation transactions	$C_e = C_c \times \frac{P_c}{C_{cc}}$	C_e is IAR creation efficiency coefficient; C_c is IAR commercialisation coefficient; P_c is profit from IAR commercialisation; C_{cc} is the costs of IAR creation and its commercialisation.
Growth rate	Assessment of the innovation infrastructure development sustainability, considering the dynamics of jobs created by it	$R_g = \frac{n_{iie}}{N_{iie}}$	R_g is the growth rate of the innovation infrastructure; n_{iie} is the number of innovation infrastructure elements created in the reporting period; N_{iie} is the total number of innovation infrastructure elements.
Engagement rate	Assessment of the level of students, postgraduates and university staff involvement in innovative activities	$R_e = \frac{n_s + n_e}{N_s + N_e}$	R_e is engagement rate; n_s , and n_e are the number of students and university employees engaged in innovative activities, respectively; N_{cr} , and N_{pa6} are the total number of students and employees of the university, respectively.
Human resource potential coefficient	Assessment of the qualification level of employees	$C_{hrp} = \frac{n_{ea}}{N_e}$	C_p is human resource potential coefficient; n_{ea} is the number of university employees advancing their qualifications in innovative entrepreneurship and technology transfer; N_e is the total number of university employees

Resource: *Mitrofanova & Zakharova, 2017.*

Sergey Lebedev^[2]

The evolution of the formation of the Vilna Province as part of the Russian Empire

Abstract: Individual European city historiography research is an urgent area of scientific activity in history as it helps to get a comprehensive understanding of the development of individual territories, their society, ethnography, culture, and economy. Despite political transformations that actively influence views on historical events, requiring constant analysis and revision of the values of historical changes, science is obliged to consider all cause-and-effect variations of relationships. It is a comprehensive and sometimes impartial analysis of the national idea that can present the historical appearance of the city more realistically. The study object was the city of Vilna during its incorporation era into the Russian Empire of the 19th and early 20th centuries. The study subject was the historical, political and socio-ethnological transformations of Vilna's urban environment. The study purpose was to identify the features of the historical, political and socio-ethnological transformation of the urban environment of Vilna. To achieve the purpose and solve the study tasks, comparative historical, logical, problem-chronological and retrospective methods of analysis were applied. The study used materials published during the period of the Russian Empire, just like in the Soviet and post-Soviet periods, including publications in Lithuanian Internet resources. The author concludes that for more than 120 years of Vilna's presence in the pre-revolutionary Russian Empire, there was a gradual urban environment integration into the Russian community. The urban population perceived the Russian language and culture of everyday life and relationships, just like technology without any special negative costs, facilitated by the increased level of urbanisation of the territory, unlike neighbouring provinces.

Keywords: Vilna, Vilnius, Vilna province, Vilna Bulletin.



Introduction

Individual European city historiography research is an urgent area of scientific activity in history as it helps to get a comprehensive understanding of the development of individual territories, their society, ethnography, culture, and economy. Despite political transformations that actively influence views on historical events, requiring constant analysis and revision of the values of historical changes, science is obliged to consider all cause-and-effect variations of relationships. It is a comprehensive and sometimes impartial analysis of the national idea that can present the historical appearance of the city more realistically.

The study object was the city of Vilna during its incorporation era into the Russian Empire of the 19th and early 20th centuries.

The study subject was the historical, political and socio-ethnological transformations of Vilna's urban environment.

The study purpose was to identify the features of the historical, political and socio-ethnological transformation of the urban environment of Vilna.

Based on the study purpose, the following tasks were developed:

- analyze the historical events that influenced the transformation of Vilna's urban environment in a temporal sequence;
- identify the socio-political features of the change in Vilna's urban society;

- determine the causes and role of Vilna's society Russification process in the post-Soviet period of the city's existence.

To achieve the purpose and solve the study tasks, comparative historical, logical, problem-chronological and retrospective methods of analysis were applied.

The study used materials published during the period of the Russian Empire, just like in the Soviet and post-Soviet periods, including publications in Lithuanian Internet resources.

The results of the study

In 1795, after the third partition of Poland, Vilna finally became part of Russia. However, this was preceded by very dramatic events. In 1792, Russian troops occupied the territory of the former Grand Duchy of Lithuania. The following year, 1793, was followed by the second partition of the Polish-Lithuanian Commonwealth. The Vilna region and modern western Belarus, together with a small territory of indigenous Poland, remained part of what remained of the former Polish-Lithuanian Commonwealth. In 1794, an uprising led by Kosciuszko broke out against the powers that divided Poland. In 1795, after the suppression of the Kosciuszko uprising, the Polish-Lithuanian Commonwealth was abolished. Lithuania and western Belarus became part of Russia. Vilna became the centre of the Vilna province. Officially, the city was still called Wilno in the Polish manner. It was only after the pacification of the Polish rebellion of 1863 that the authorities began calling the city by its historical name Vilna. However, in the townspeople's speech and the newspaper texts, both city names peacefully coexisted at that time.

Having become a Russian provincial centre within the empire, Vilna experienced population and industry growth. In 1799, a new City Hall building was built. Interestingly, this building was often used as a theatre. Gradually, the Town Hall building turned into a theatre. The square where the Town Hall was located became known as the Theater. In 1803, the Vilna University was opened.

In 1811, Vilna, which had 56 thousand inhabitants, became even the third largest city in Russia, after St. Petersburg and Moscow. Although Vilna soon lost the bronze medal to other rapidly growing cities in Russia, it remained a fairly large city. In 1897, Vilna was the 10th largest city in Russia. The city's development was hindered by political events that made Vilna a battlefield.

How the Patriotic War of 1812 took place on Lithuanian territory has already been discussed above. Recall that Napoleon entered Vilna on June 16(28). He managed to proclaim the creation of a local government under French control and tried to attract Litvinov into the ranks of his army. However, Napoleon stayed in Vilna for 18 days. Considering that all matters related to the management of the occupied territories had been settled, he went deep into Russia to his defeat.

Again, in Vilna's vicinity, fighting took place in the spring and summer of 1831 during the next Polish uprising.

After these events, the Vilna region experienced a period of peace and a certain economic prosperity. During the new Polish uprising of 1863-64. The Vilna province was a theatre of military operations, but the city, which housed the Governor-General M.N. Muravyov, was not affected by military operations. Although the Polish insurgent committee operated illegally in

Vilna, and a secret printing house worked in St. John's Church, the special services of the Russian Empire knew their business and did not allow a mutiny in the city. Russian patriotic movement finally influenced the city to be called Vilna in the Russian manner (although the Polish version of the name Vilna was still widely used in literature).

But gradually, by the second half of the 19th century, as a result of economic and cultural development, Vileshchyna acquired special features unique to this region.

Greatly declined in 1812, the population began to increase again. Vilna had 58 thousand people in 1859. Vilna already had 84 thousand inhabitants in 1875, 154 thousand in 1897, and 205 thousand in 1909. Vilna began to turn into a modern European city.

However, for the Europeanization of the city, the main obstacle was precisely the position of the ruling regional elite. In the autocratic Russian Empire, the authorities tried to carry out democratic reforms, which caused the rejection of medieval Vilna city institutions. So, in 1811, the Russian administration proposed to greatly expand the circle of citizens who had the right to choose a city magistrate, but the magistrate himself sharply opposed it. In 1817, the Governor-General proposed that two representatives of the Jewish community be appointed to the magistrate. The members of the magistrate declared that they did not agree to sit with Jews in the same hall and announced a boycott. As a result, the Governor-General had to withdraw his decision. It is what the "national liberation movement" against the autocracy looked like. Before the appearance of Count Mikhail Muravyov as Governor-General in Lithuania, the position of the former ruling circles of the former Grand Duchy of Lithuania (magnates, gentry) in Vilna, and in Lithuania itself, was exceptionally strong, any imperial administration had to reckon with this. The Lithuanian-Polish nobility stood behind the old, good traditions like a wall (*Vilna, Vilna, Vilnius...*, 2016).

However, Vilna nevertheless turned more into a city of Russia and not the former Grand Duchy of Lithuania. It started with the fact that the street names were officially approved. Until the end of the 18th century, the names of city streets were not well-established, and the townspeople called them so that they could understand each other. The addresses were indicated by the names of the owners of the houses standing on the street. In 1819, the imperial authorities began to install signs with the street name and house numbers. However, initially, the city owners did not bother to invent new names and simply approved the existing street names. Often, the name of one street peacefully adjoined the name in Russian and Polish. So, Popovskaya Street was simultaneously called Popovshchizna, Myasnitskaya was also known as Yatkova, etc. Some streets had names in the Yiddish language. Sometimes, the names were duplicated in French and German. But there were no Lithuanian names because of the almost complete absence of Lithuanians in the city. In 1864, at the initiative of Count Muravyov, some Polish names of Vilna streets were nevertheless Russified. Bernardin Lane turned into Castle Lane, and St. Anna Street became Suvorovskaya.

After 1812, a large-scale reconstruction of the city began. In the place of the confusing chaos of small medieval streets and dead ends, a chess building has come. However, it is necessary to pay tribute to the architects – the reconstruction did not affect the Old Town, which has survived to our time as a result.

The paving of the streets began, and street lights appeared, working first on hemp oil and then on turpentine. In 1852, there were 2,189 lanterns on the city streets, burning from

September 1 to mid-May. By the 1863 Polish uprising, 50 thousand people already lived in Vilna. There were about two thousand houses in the city. There was no large-scale industry – the largest urban enterprises were two paper mills, and even those were located outside the city. But there were many craft workshops. There was one bank office, 65 shops selling clothes and haberdashery there were nine bookstores, 18 hotels, 13 pharmacies, just like 27 wine shops, 12 vodka shops, 43 drinking houses and 43 damask shops. In addition, there were two large inns. Education was provided by a noble institute, a boarding school for noble maidens, five parish schools, nine private boarding schools, and Orthodox and Catholic theological seminaries, just like a Jewish rabbinical school. Three hospitals took care of the mortal bodies, an orphanage for orphans, and finally, there was a madhouse.

Although Vilna University was closed after the pacification of the Polish uprising of 1830-31, the city continued to enjoy a well-deserved reputation as one of the best scientific centres in Russia. Conducting observations at the Vilna Observatory, the pioneers of astrophysics Matvey Gusev (1826-1866) and Egor Sabler (1810-1864) began to perform systematic photographic studies of sunspots for the first time.

Remarkable changes have taken place in urban architecture thanks to architects from St. Petersburg and Moscow. Architect Nikolai Chagin (1823-1909) did a lot to transform Vilna from a medieval dilapidated city into a European city of the 19th century. Some of his architectural solutions for that time were quite bold and new. Chagin (together with A.I. Rezanov) restored the Orthodox Prechistensky Church in 1348. Alexey Polozov (1820-1903) actively restored ancient buildings. Another major architect who greatly decorated the city was Mikhail Mikhailovich Prozorov (1860-1914). More than 50 buildings and structures of various purposes, built by Prozorov, have been preserved in modern Vilna. Alexander Koroyedov built almost fifty buildings in Vilna. August Klein and Otton Krasnopolsky worked in the city. In 1894, a metal bridge was built across the Neris River, designed by Russian engineer Nikolai Belyubsky. Previously, there were wooden bridges at this place, traditionally painted green. Belolyubsky did not break the tradition and the bridge was also painted green. So, Vilna acquired the main recognizable features.

Art developed in the city. The Vilna School of Drawing was headed from 1866 for 40 years by Ivan Petrovich Trutnev (1827-1912), who graduated over 4,000 graduates for that time, 50 of whom later entered the Academy of Arts in St. Petersburg. In 1904, the Vilna Drawing School was recognised as the best in Russia. Trutnev and his students created an entire local school of academic painting.

Monuments to Muravyov (1898), Pushkin (1900), and Catherine II (1903) were erected in the city. The Muravyov Museum was created. It was not only the Governor General's memorial museum but also the Museum of Local History of the North-Western Region.

The Vilna province developed quite quickly. The Petersburg-Vilna-Warsaw railway passed through the province. However, rivers were still the main means of communication. According to the statistics of the General Staff, on the eve of 1861, weaving, leather, ceramic and jewellery industries were developed in the province. Distillery production was specially developed. There were 287 officially registered distilleries in the province, producing 800 thousand buckets per year (*Korevo, 1861*). A significant part of what was produced was consumed locally. The author of the three-volume history of Vilna, historian Michal Balinsky, who then created a statistical

survey of the region, counted almost eight hundred pubs and pubs in the city. It turned out that one such institution accounted for about forty residents, including women and children.

As in its entire history, Vilna remained a multinational city. So, in 1897, there were 61,847 Jews among the inhabitants of the city, 47,795 Poles, 37,998 Russians (of which 30,967 Great Russians, 6,514 Belarusians, 517 Little Russians), 3,131 Lithuanians, 2,170 Germans. As we can see, no ethnic group prevailed. As the editor of the local official newspaper *Vilensky Vestnik* wrote with the surname Mikhail Fedorovich De-Poulet (de Poulet), which is quite suitable for this cosmopolitan region about the Vilna region after the pacification of the Polish rebellion of 1863, “the region is both polarised and Russified together, i.e., it represents such a moral physiognomy. Such a physiological crossbreed, which neither popular feeling nor state interest can satisfy: there is nothing (or so little) whole, complete, organically typical!” (*De Poulet, 1867*). Gradually, Vilna and the Vilna region became more and more Russian in language and way of life, remaining multinational.

Russian Russians, however, as early as 1868, immediately after Muravyov’s reforms, one of the authors of the *Vilna Bulletin* noted that although the Russian population of the city without troops is less than 10%, it dominates and the ubiquitous Russian speech, Orthodox churches and church life are “external phenomena that inform Vilna of the Russian physiognomy” (*Vilna Bulletin, 1868*). In 1870, the poet Fyodor Tyutchev had every reason to exclaim:

Above the Russian Village of Starodavnaya
The crosses are warm –
And the ringing of the Orthodox brass
All the heights were announced.
The centuries of temptation
have passed, Terrible deeds have been forgotten –
And even the abomination of desolation
It blossomed like a cry of paradise here.

During the first years of the new 20th century, Vilna has not lost its multinational character. According to data collected by the local administration, in 1909, out of 205,250 residents of the city there were 77,500 (37.8%) Poles, 75,520 (36.8%) Jews, 2,453 (1.2%) Lithuanians, 7,158 (3.5%) persons of other nationalities, as well as 37,341 (18.2%) Russian Orthodox Russian Russians, plus 5,236 (2.5%) Old Believers and 42 Russians of other faiths.

In addition to the city itself, Vilna County also differed ethnically from Lithuania and Belarus proper. The Slavs, who spoke Belarusian, professed Catholicism, and on this basis considered themselves Poles, prevailed. It should be noted that the ethnic identity of the majority of the inhabitants of the Vilna region was still uncertain. Religion and language were the basis for the self-determination of the inhabitants of the Vilna region. According to the 1897 census, 935,849 (59%) Catholics, 440,968 (28%) Orthodox and Old Believers and 214,390 (13%) representatives of other denominations, mainly Jewish, lived in the Vilna province. However, there is no data for individual counties. We can only assume that there were more than 59% Catholics in the provincial capital vicinity.

The data on the native language is more representative. In 1897, Russians of all three branches made up the majority – 132,359 people (the majority were Belarusians), 77,224 Jews, 76,030 Lithuanians, and 73,088 Poles. Thus, the Vilna County population differed from the

population of the provincial capital by a higher proportion of Russians and Lithuanians. For example, in Troki County, there were 58% of Lithuanians and 16% of Belarusians. In the Sventsyan district, 47.5% of the residents spoke the Belarusian dialect of the Russian language, and 34% spoke Lithuanian as their native language. It is worth noting that, in the absence of a clear border between the Balts and the Slavs at that historical moment, ethnic Lithuanians lived further south, on the lands of modern Belarus, however, not making up the majority. So, in the Oshmyansky district (now the Grodno region), Lithuanians accounted for about 3% of all residents, and the Lithuanian minority was 8.6% in Lida County. If we recall that these lands were the historical Black Russia and the heart of the Soviet Union, then the process of Slavonization of the Balts was very clear.

In religious terms, too, despite the predominance of Catholics and Jews, the number of Orthodox Christians was slowly but surely growing. In addition, many Russian Old Believers of the Vilna province, leading a closed lifestyle and not seeking to get into various statistical reports of the authorities, remained almost unnoticeable, registering as Orthodox, or even as Catholics although their numbers increased rapidly due to high natural growth.

There were a few more Jews since the census did not take into account baptized Jews (“crosses”) as Jews. But at the same time, some Jews gradually switched to Russian, most remained faithful to Yiddish, and several Jews spoke Polish. Politically, many Vilna Jews actively participated in the social democratic movement, making Vilna the centre of activity of the Bund party. At the same time, Vilna became one of the centres of the Zionist movement. Hebrew literature began to revive among the Vilna Jews, and Yiddish literature continued to develop. By the end of the imperial period, Vilna Jewry had mostly switched to Russian. As the famous Polish poet and writer Czeslaw Milosz, a native of Vilna region, self-critically acknowledged, “their [Jewish youth – author] craving for Russian culture, however, can also be explained by its attractiveness, because there was no anti-Jewish stereotype in it, as in Polish” (*Milosz, 2011, pp. 29-30*). This fact is interesting. In the elections to the First State Duma in 1906, the Jew Shmaria Levin passed from Vilna. The journalist of the Polish-language Courier Litevsky, who interviewed him, regretfully stated that the new deputy no longer knows Polish. He considered Russian to be his native language, although he spoke it with a specific Jewish accent.

The Poles’ position was shaken, although they made up a third of the population and belonged to a fairly educated and prosperous part of the Vilenets. Although the authorities had a biased attitude towards the Polish language in the North-Western Region, there was no persecution of the language. Polish writer Jozef Mackiewicz in his memoirs referred to his experience of studying at Vinogradov’s private gymnasium. At that time, at the Russian gymnasiums of Vilna, at the parents’ request, the study of the Polish language was allowed. However, despite reproaches for the lack of Polish patriotism, high school students systematically skipped classes in the Polish language, as this required them to arrive half an hour earlier. As a result, the study of the native language was organised under duress: the gymnasium director personally met students who were late for class, and as punishment for absenteeism left them after classes at the gymnasium (*Mackiewicz, 2010*). Matskevich was a very tendentious writer (in particular, he was one of the main organisers of the fake about the shooting of Poles in Katyn) but there was no point in exaggerating anything in his childhood memories. By the way, the teaching of the Roman Catholic Church catechism and the common prayer for

Catholics before the start of classes in all Vilna's educational institutions were also performed in Polish.

Vilna region remained one of the centres of the Polish nationalist movement. It is significant that in September 1908, not far from Vilna, a group of militants of the Polish Party of Socialists (PPP) under the leadership of Yu. Pilsudski committed an armed robbery of a mail train carrying money, killing a guard at the same time. The booty of the raiders amounted to a huge amount – over 200 thousand rubles. It is significant that in the future Pilsudski became the dictator of Poland, and three of the raiders became prime ministers.

Catholic Belarusians continued to join the ranks of the Vilna Poles. However, Belarusians are Catholics, and some Poles and Lithuanians gradually Russified, switching to Russian while maintaining the Catholic faith. As the *Vilna Bulletin* noted with satisfaction in 1867, “To the question: who are you – a Russian or a Pole – here in Vilna, at least, the answer is: I am a Catholic” (*Vilna Bulletin, 1867*). By the beginning of the 20th century, there were more and more such Russian-speaking Catholics, although, as a rule, due to their religion, they were counted by official statistics as Poles. At the Vilna Catholic Seminary in 1912, 119 students considered themselves Poles, 34 Lithuanians and 25 Belarusians (*Silvanovich, 2014*). However, in this case, the identity of the seminarians was influenced not by ethnicity but by faith (Catholic means Polish), just like territorial identity (Lithuanian – a native of the lands of historical Lithuania, Belarusian – a resident of the western outskirts of Russia). In principle, these Russian-speaking Catholics gradually turned into a kind of ethno-confessional group, which could later join the Russian nation. However, it was more likely that these Vilna Russian-speaking Catholics, who preserve Polish identity, would remain Poles. Due to historical vicissitudes, some of the Vilna Catholics later became “Lithuanians”. However, initially, no one could have guessed this in their right mind.

How the ethnic development of the Vilna Region took place can be judged by some facts. Since being a nobleman in a class society meant belonging to the elite, in the Vilna region most of the nobles referred themselves (in this case, it does not matter whether it is fair or not) to the gentry. It is no coincidence that it was in the Russian Vilna province that the issue of official recognition of the nobility turned out to be very painful. Many nobles were declassified, i.e., they were deleted from the nobility lists. However, it turned out that many local natives of very dubious class affiliation turned out to be inscribed in the nobility. A native of Ukraine, the famous Polish memoirist A. Ivansky Jr. tried to solve the issue that had been troubling him for a long time with the help of a professional linguist. “Professor Henrik Ulashin,” he recalled, “to whom I once asked to determine whether my last name comes from Ivan or Willow, said: “Absolutely definitely, Ivan. However, if you happen to meet some Vankovich, you can look down on him because you are a full-fledged Ivan, and he is just a Roly” (*Stankevich, 1909, pp. 20-21*). By the way, the noble family of Vankovich existed. Of course, the Vankovichs derived their origin from the princes of Polotsk. In modern Minsk, there is a Vankovich house museum dedicated to one of the most prominent representatives of the family, the famous artist Valenti Vankovich (1800-1842). Another Vankovich was a deputy of the State Duma of the 2nd and 3rd convocations. Totally, more than 200 representatives of the genus are known.

Russian population growth and the transition to Russian of several ethnic groups of the townspeople of Vilna in the 19th century gradually lost the features of a Polish city, although it

remained one of the main centres of Polish culture with the Polish press, publishing houses and theatre.

Polish landlords still dominated the province, owning 73% of the cultivated land in 1910, although from 1864 to 1904. they were deprived of the right to buy land. However, in reality, most of the landlords' lands were mortgaged in various banks. Some of the noble lands gradually passed into the hands of Russian officials and a small number of wealthy peasants. On behalf of Polish nobles, estates were often owned by Jewish bankers.

The Russian Vilna did not represent a single ethnic community, being split politically. It is no coincidence that Vilna has become one of the centres of Belarusian separatism. The founding congress of the first political party, *Belaruskai Satsyalistychnai Gramady*, was held in Vilna in 1903. It was in Vilna that the first literary works in the modern Belarusian language were published, Belarusian organisations operated, and the first Belarusian newspapers were published – *Nasha Niva*, *Gomon* and others.

However, in general, Russians defined the character of the city by the beginning of the 20th century. Russian art was enriched by such natives of Vilna as composer Caesar Cui, a half-Frenchman, half-Lithuanian by birth, a wonderful actor Vasily Kachalov, a native Belarusian, sculptor Mark Antokolsky, a Jew who violated the religious prohibitions of Judaism, architect Lev Kukulshvili, who built more than 60 Art Nouveau houses in Moscow. The already mentioned Mikhail Fedorovich De Poulet created his own special easily recognizable style of Vilna journalism. Vera Komissarzhevskaya started her way to the big stage at the city Russian Theater, founded in 1864. In 1893, the 9th Congress of Russian Archaeologists was held in Vilna.

However, there were almost no ethnic Lithuanians in the city, who numbered only about 2% of the population. There were much more Lithuanians in St. Petersburg, Chicago and Buenos Aires. However, since Vilna evoked an association with the history of the Grand Duchy of Lithuania, which was privatised by figures of Lithuanian nationalism, it was not surprising that Lithuanians wanted to publish their newspapers in Vilna (which had almost no readers in the city itself) and open the headquarters of their organizations. The Russian authorities did not hinder them, considering the Lithuanian movement as anti-Polish, and therefore quite loyal to the empire. A group of 12 activists, modestly calling themselves the Twelve Apostles, decided to achieve Lithuanian service in at least one of the churches of Vilna. In 1901, with the approval of the Russian administration, church services in Lithuania began in the city's smallest church St. Nicholas. Since 1903, Lithuanian publications began to call the city "Vilnius", considering this name to be truly Lithuanian. At the same time, it is worth noting that the name "Vilnius" (Vilnius) was invented artificially because even in the language of the Lithuanians themselves, the city was originally called "Vilnia" (Vilnius). One of the districts of present-day Vilnius is called *Novaya Vilnya* (*Naujoji Vilnius*). The use of the word "Vilnius" began when Lithuanian linguist, graduate of St. Petersburg University, professor of Perm and Tomsk Universities Kazimer Buga introduced the original alphabet of the modern Lithuanian language, taking the alphabet of the Czech language as a basis. At the same time, the first grammatical settings of the Lithuanian spelling of the names of Lithuanian cities with the ending in "AS", "IS", and "US", just like names in general, appeared. At the same time, only one street in Vilna had a Lithuanian name – *Zhmudinskaya Street*. The first school with Lithuanian as one of the languages of education opened in Vilna in 1907.

The reasons for supporting the Lithuanian movement of the Russian imperial administration were quite understandable – it was an attempt to end the Polish issue. Vilna’s Governor D.N. Lyubimov, assessing the political situation in the province in 1907, noted that the Poles “not only did not refuse but hardly ever refuse to see Lithuania and Belarus as an area exclusively within the sphere of Polish influence and Polish cultural and economic conquests, where the Polish nationality interests are worth preferring to the interests of the national”. Since the Catholic Church was a stronghold of the Poles, the governor proposed simply introducing Belarusian and Lithuanian into the language of preaching (*Kisehyan, 2023*).

The Lithuanians’ patronage by the powers that be did not prevent the city from remaining a cosmopolitan city. It is significant that, in 1911, 69 newspapers were published in Vilna. There were 35 Polish, 20 Lithuanian, seven Russian, five Jewish in Yiddish, and two Belarusian. However, many city newspapers published materials in several languages at once, and paid ads were multilingual in all newspapers, so it was difficult to calculate the “nationality” of a particular publication. Russian newspapers were significantly smaller than Polish and Lithuanian newspapers, but the total circulation of newspapers in Russia was the largest. In addition, the residents of Vilna subscribed to many St. Petersburg newspapers and magazines. Publications of various ethnic groups were also printed in Russian (e.g., in 1913-14, the Karaite Word, the first Karaite newspaper, was published).

But if there were almost no ethnic conflicts in Vilna, then the social situation created conditions to increase crime. In particular, in 1899, 4,089 crimes committed by 5,661 persons were registered, and two years later 4,706 offences (an increase of 15%) and 6,675 criminals (an increase of 18%) were recorded (*Kisehyan, 2022*). Only 570 people were registered as legal prostitutes in Vilna in 1902, not to mention hundreds of secret ones. In 1906, eight large and many small “houses of tolerance” officially operated in Vilna. The brothel of a certain Baila Dushanskaya was a real three-storey palace with luxurious interiors, a greenhouse and a restaurant. There was no shortage of clients at the brothel. The earnings of only two establishments – Etkka Brezinger and Hai Feigelson, located on Orenburg Street (now Shvitrigailos) in 1906 amounted to 18,603 rubles (*Gladkova, 2020*). It was the income of an average industrial enterprise.

The crime rate in Vilna was very high compared to the cities of the Russian Empire as a whole. However, the police authorities, in the fight against criminal elements, also employed the latest technical achievements. So, at the city police department in July 1903, an Anthropometric Bureau was formed, in which measurements of criminals were performed. On October 1, 1903, the first anthropometric measurement of the offender was performed according to the Vilna Bulletin newspaper (*Vilna Bulletin, 1905*).

The city was gradually developing, industrial enterprises were growing. So, in just 10 years, from 1890 to 1900, the number of factory workers and industrial enterprises increased fivefold in the city, reaching 5,380 workers working at 336 factories. Interestingly, the production of “Parisian” products such as lace, gloves, shoes, stockings and underwear were established in Vilna, which was distributed throughout Russia. In 1901, electricity appeared in the city – the first power plant gave current. However, up to the middle of the 20th century, before the establishment of Soviet power, a third of urban dwellings did not have electric lighting.

Vilna increasingly acquired the features of an ordinary European city of medium size at the beginning of the 20th century – paved streets, sturdy houses built in different architectural styles, and a rich cultural life. However, unexpectedly, Vilna lacked the most advanced mode of transport at that historical moment – the electric tram. Interestingly, for completely different reasons, two prominent residents fought against the creation of a tram in Vilna. Lawyer Franciszek Bagushevich opposed the tram, believing, not without reason, that it would rumble unbearably, contradict local architecture, and destroy ancient picturesque alleys (*Venclova, 2018*). However, what guided the Vilna governor in 1906-1912, D.N. Lyubimov. According to his son's memoirs, "It was about replacing the antediluvian Vilna tram with a tram. The city officials approved the estimate, but my father refused to approve it. Once I heard an explanation about this between my parents. "Why do you persist? My mother asked. – Abroad and in smaller cities there is a tram... – And because, – the father answered, – that I am afraid to lead my subordinates into temptation! When the money is collected, someone will certainly whistle for it." ... So, Vilna remained with her father without a tram" (*Lyubimov, 1990*). Well, the province was also famous for corruption throughout Russia. And there is no tram in Vilnius to this day.

Conclusion

Thus, for more than 120 years of Vilna's presence in the pre-revolutionary Russian Empire, the gradual integration of the urban environment of the city into the Russian community took place. The population of the city perceived the Russian language and culture of everyday life and relationships, just like technology without any special negative costs, facilitated by an increased level of urbanization of the territory, unlike neighbouring provinces, where life national way was logically preserved, which became some foundation of the national cultural heritage later, during the Soviet period of Lithuania's existence.



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Contemporary education and concepts of leadership of the modern teacher

Abstract: Effective leadership in modern education makes it easier to fit into new situations and adapt work to changed circumstances, which enables the sustainability of the education system. As this learning process has undergone many changes over the years, from the last traditional organization to the implementation and evaluation, it is obvious where the teacher can have in his leadership position for the further course of the learning process, whether we are talking about traditional education or digital education. The learning process leadership purpose is to set a direction for action and exert influence, while the way to achieve this and the personality of the one who leads the learning process further lead to different types of leadership in which we can recognize the modern teacher. A leader inspires and empowers others, he must think holistically, outside the frame work of the organization he leads, to achieve stable results, clarify priorities and plan appropriate activities for their realization. For a teacher to be a good leader, he must first of all see himself as a person who instigates changes in the organization, he must act as an advocate for the change he wants to achieve, he must have an interest in the problems that are articulated and have leadership skills to motivate others in the change process. The purpose of this article is to present the leadership competencies and basic concepts of the leadership of the modern teacher. The tasks of the research are: 1. Establishing leadership strategies and competencies of teachers. 2. Analyzing the impact of the teachers' leadership activities in the reflection of the students' achievements. The main goal of the educational system is to form professional competence in the future teaching staff. Leadership and management are key foundations of modern education and concepts of great importance in pedagogy. The improvement of educational organizations depends on the ability to take leadership actions and the readiness to acquire leadership competencies of all participants in the educational system. A successful leader in education creates a stimulating work environment, provides direct support to followers, ensures their commitment to higher goals and creates conditions for the development of their potential. In order to succeed in this, the participants in school life must be aware of their leadership skills and direct all activities in the direction of improving the quality of teaching and learning.

Keywords: leadership, strategies, competences, teachers, students, achievement.



Съвременно образование и концепции за лидерство на днешния учител

Резюме: Ефективното лидерство в съвременното образование улеснява вписването в нови ситуации и адаптирането на работата към промените се обстоятелства, което позволява устойчивостта на образователната система. Тъй като този процес на обучение е претърпял много промени през годините, от последната традиционна организация до прилагането и оценката, очевидно е как учителят може да има лидерска позиция за по-нататъшния ход на процеса на обучение, независимо дали говорим за традиционно образование или дигитално образование. Целта на лидерството в процеса на обучение е да зададе посока за действие и да упражнява влияние, а начинът за постигане на това и самите личностни качества на този, който ръководи процеса на обучение, допълнително водят до различни видове лидерство, в които можем да разпознаем съвременния учител. Лидерът вдъхновява и дава сила на другите, лидерът трябва да мисли холистично, извън рамките на работата на организацията, която ръководи, за да постигне стабилни резултати, да изясни приоритетите и да планира подходящи дейности за тяхната реализация. За да бъде един учител добър лидер, той трябва преди всичко да вижда себе си като

човек, който диктува промените в организацията, той трябва да действа като инициатор на промяната, която иска да постигне и да има интерес към проблемите, които са артикулирани и изискват лидерски умения, за да мотивират другите в процеса на промяна. Целта на тази статия е да се представят лидерските компетентности и основните концепции за лидерството на съвременния учител. Задачите на изследването са: 1. Установяване на лидерски стратегии и компетенции на учителите. 2. Анализиране въздействието на лидерските дейности на учителите в отражение постиженията на учениците. Основната цел на образователната система е да формира у бъдещите педагогически кадри професионална компетентност. Лидерството и управлението са ключови основи на съвременното образование и концепции от голямо значение в педагогиката. Усъвършенстването на образователните организации зависи от способността за предприемане на лидерски действия и готовността за придобиване на лидерски компетенции на всички участници в образователната система. Успешният лидер в образованието създава стимулираща работна среда, оказва пряка подкрепа на последователите, осигурява тяхната ангажираност към по-високите цели и създава условия за развитие на техния потенциал. За да успеят в това, участниците в училищния живот трябва да са наясно със своите лидерски умения и да насочват всички дейности в посока на подобряване качеството на преподаване и учене.

Ключови думи: лидерство, стратегии, компетенции, учители, ученици, постижения.



Introduction

All segments of human work imply an organized, planned and cooperative way of functioning of all participants in order to achieve prosperity for the whole organization. At the head of every institution is a leader who oversees, directs and directs its activities, functioning and movement according to changes and innovations. In this article, we will focus on the role of leaders in the educational process, looking at it from the viewpoint of the need, significance and qualities of teachers, in which we recognize the leadership abilities that the teacher as a leader can have at the school level and, above all, the influence of the teacher on the learning process and the students he works with. Therefore, the purpose of this article is to highlight the importance of the leadership role of teachers in modern education.

The director of the school, who is most often called the leader, has the task and the obligation to meet the needs of the employees. In the same way, the teacher, as the person who is at the head of the class, must respond to the needs of the students, but also of his colleagues, all according to the requirements of modern society. Given that a leader with his experience, interpersonal skills and access to necessary resources contributes to the community he leads, he must have a vision of how to turn ideas into reality. This makes school leaders the main change agents who maintain a balance between external demands and school needs (*Kin & Kareem, 2019*). The teacher as a leader is equally significant, especially if we consider that he helps to create a connection between the students and the community. “The concept of leadership in teacher work is quite uncertain” (*Printy, 2008*). Although the importance and necessity of effective leadership in the educational process has long been emphasized, the definitions of the teacher as a leader are too few. For this reason, this article will analyze the teacher’s role as a leader and examine his leadership contribution to the school community, primarily to the classes he “manages”.

The teacher plans, organizes, implements the learning process, actively participates in all its stages, monitors and evaluates the achievements of the students, but also his professional performance, which we recognize as his main leadership activity. The teacher promotes learning, manages the resources in the classroom, motivates and guides the students in the process of acquiring knowledge and all these are actually the key elements of leadership behavior (*Dimkova, 2023*). The basis for building an effective motivation for cognitive activity is the individual needs of the student. Knowing them on the part of the teacher is a necessary condition for research and pedagogical activity (*Marcheva, 2020*).

Methodology

Leadership is a complex activity in the education system that can best be described as a way of responding and adapting to the challenges facing the entire education system. Our article will emphasize the importance of the role of the teacher as a leader, who is increasingly turning from a lecturer into a manager of learning. The task of the leader in an educational institution is to guide people in the right direction, and as the teacher increasingly assumes the role of leader in the modern education system, it is useful to envisage strategies that can improve the leadership skills of teachers: promoting the importance of leadership to their achievements in the classroom, additional financial incentives for teachers, initiating leadership development, and aligning leadership activities with the time teachers spend with students.

The study purpose is to present the leadership competencies and basic concepts of the leadership of the modern teacher.

The study tasks are:

- establishing leadership strategies and competencies of teachers.
- analyzing the impact of the teachers' leadership activities in the reflection of the students' achievements.

The reason for researching the aforementioned segments of leadership in the field of teaching lies in the fact that the educational system is complex, flexible and open to change, so in the near future we can expect a time when students will have a major role in organizing and implementing his own training. A teacher who has the qualities of a good and capable leader will be able to work fully effectively with these students.

Discussion

In today's modern times, it can be said that leadership skills are as significant for the proper performance of the teaching profession as pedagogical-psychological, methodological, organizational, communication and digital competences. In this sense, it is significant to point out the concept of leadership styles, which defines a specific set of traits, behaviors, gestures, activities, actions and influence of teachers and other employees in the education sector. Representatives of educational institutions develop their leadership attitudes during their professional careers. The leadership competencies of teachers enable adequate planning and organization of the educational process, developing a stimulating learning environment, taking responsibility for professional risks, starting initiatives and achieving cooperation with parents, peers and the wider social community (*Arsenijević, 2015*). In a pedagogical sense, the teacher

must possess leadership qualities in order to influence students and develop their leadership potential with their socially oriented ability.

Leadership style is defined as a characteristic way of leading through personal commitment and responsibility in pursuit of a certain vision for the further development of the educational organization and its members. Alibabic defines leadership style as a series of compatible actions, procedures, and means of direction, while other authors see leadership style as a combination of traits, skills, behaviors, and specific characteristics that manifest when interacting with subordinates (*Alibabić, 2008*). Leaders, according to their professional knowledge, skills and competencies, choose a specific way of leadership. In teaching practice, there are different styles of leadership that have been explored in terms of a variety of traditional and modern leadership theories. Contemporary perspectives indicate the presence of educational leadership models such as pedagogical, strategic, instructional, transformational and transactional styles (*Jovanović, 2022*). In reality, the situation in practice shows the widest presence of transformational and transactional leadership, which is why it is necessary to highlight the main characteristics and elements of the mentioned styles. In everyday work with students, the teacher's role is obvious and she relies on a transactional way of guiding students (*Khan, 2017; Putra et al., 2020*). Although teachers are expected to be increasingly innovative, to create an authentic and stimulating learning environment, a transformative way of managing and organizing learning is an indispensable aspect. And for everything to be effective and significant for student achievement, the teacher must adopt new ideas and initiate students in the learning process accordingly.

Concepts for teacher leadership

In modern times, it can be said that leadership skills are as significant for the proper performance of the teaching profession as pedagogical-psychological, methodological, organizational, communication and digital competences. In this sense, it is significant to indicate the concept of leadership styles, which defines a specific set of actions, behaviours, gestures, influence of teachers just like other employees in the education sector. In the above, we find the need to highlight leadership concepts that should be guiding for educators such as: setting goals, organizing and managing a process, monitoring and building relationships with other members of the school community.

The teacher is a leader because he participates in collaborative activities at the school level and identifies areas that need improvement. The competencies of teacher leaders in the modern era are reflected in assessing student progress, preparing and planning lessons, caring for the classroom climate, and managing student behavior. The basis of competence – interaction with students is the preparation for effective communication with students both in the teaching process and in situations related to their personal development and their interpersonal relationships in the student community (*Chavdarova, 2022*). The specific leadership competencies of teachers can be seen in (*Figure 1*).

The listed competencies indicate that the leader's personal integrity is paramount and that they themselves must be principal investigators.

The qualities of a leader that every teacher should possess according to the authors are the following: integrity, principles, predictability, inspiration, a look into the future, sociability and efficiency, possessing the necessary knowledge, skills and competencies (*Goolamally & Ahmad,*

2014). A high level of subject mastery, cooperation and pedagogical flexibility on the part of teachers are significant characteristics for proper and functional guidance. In this sense, helping and empowering implies optimism, determination, and self-improvement of teachers. Expertise is the mastery of learning material, pedagogical knowledge and skills, knowledge of students' cognitive capabilities and development opportunities. Reflection is questioning one's own actions and expectations, just like understanding the perspective of others. Cooperation is a willingness to compromise and cooperate, good communication skills and active listening, while flexibility is the ability to be tolerant and adaptable.

The modern educational process requires increasingly better management skills, and the leadership role of teachers is a key factor contributing to student success (*Augustsson & Boström, 2012*). The atmosphere and social relations in the classroom largely depend on the teacher. In addition, the behaviour of the teacher, just like his leadership role, significantly influence student achievement. The level of student engagement depends on the ways of creating a learning environment, and in this process the key role belongs to the teacher. It is evident from the conceptual definition itself how significant teacher leadership is to student achievement. In addition to the above, evidence of the teacher leadership positive effect on student learning. The creation of a favourable climate for learning, student motivation and overall learning success can be found in the research of many authors who deal with this problem (*Antonopoulou et al., 2021*).

It is evident that teacher leadership is significant to learning and thus influences the learning process of both teachers and students. In favour of this, there are five dimensions of leadership that influence the learning process of students and teachers (*Robinson & Timperley, 2007*):

- provision of educational direction;
- ensuring strategic alignment;
- creating a learning community;
- initiating constructive discussions and participating in them;
- selection and development of intelligent tools.

These dimensions speak in favor of how significant leadership is to student achievement, but there are also elements that show its importance to teachers' professional development. The leader at the school level (the director) decides and determines the direction of the educational activities and strategically coordinates them with the social community. These roles are not suitable for teachers, but when it comes to creating a learning community, constructive discussions and choosing smart tools to be used for learning and teaching purposes, the role of the teacher is obvious.

Results

The main work of the teacher is aimed at the achievements of the students. Thus, there are leadership activities that teachers could use and positively influence student development and progress. Good classroom management enables and motivates students to approach the learning process in a different, more innovative and creative way. In order for the teacher to achieve the desired results through the way he organizes and teaches lessons to students, it is necessary for him to participate in discussions about learning and potential ways of influencing

students, participate in the development of the curriculum and systematically monitor the progress of the students.

For effective leadership in education, it is necessary to understand the current situation, but also to understand the goals to be achieved and the steps that lead to their achievement. Effective leadership of the modern teacher requires reflection on experience and ability, but also the desire and motivation of teachers to take on this role. The leadership of the modern teacher reflects the way he works towards both students and colleagues. Organizing innovative lessons, following the curriculum and curriculum, leading and maintaining a good classroom climate, monitoring student progress and collaborating with parents and colleagues are some of the qualities that can be attributed to a teacher and reflect his leadership activity. Accordingly, each of the mentioned activities relies on certain knowledge, skills and competences that the teacher must possess. The effect of the leadership practice of the modern teacher on student achievement can be seen in (Figure 2).

Conclusion

From the above it can be seen that the leadership role of the teacher can be fulfilled in many different ways. This would mean that successful teacher leadership does not follow a unique formula that applies to all situations. Most significantly, however, most of the skills a successful educational leader must possess can be learned and improved. In this sense, thinking about the continuous professional development of teacher-leaders should be one of the main topics of the scientific and political discourse on quality education. We conclude that innovation, openness to change and creativity are the key qualities of a teacher as a good leader.

Therefore, in the numerous reforms that the education system in our country has undergone, we realize the need to focus on the leadership of teachers, since the effectiveness of teaching and the improvement of the quality of learning depends on their participation. Leadership is one of the factors within the scope of the education system that affects the quality of education. Teachers' leadership activities are expressed in the creation of a stimulating learning environment, the development of critical thinking and problem-solving skills, just like the construction of other significant strategies. This would mean that the traditional views on the teaching profession are not adapted to the needs and specifics of the modern era, which is why significant changes are needed in the initial education of teachers in the direction of their preparation for effective leadership.

It is therefore necessary for higher education institutions that prepare teaching staff to pay special attention to the preparation of future teachers for the role of leaders, while introducing new and renewing existing courses in pedagogical leadership.



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Appendix

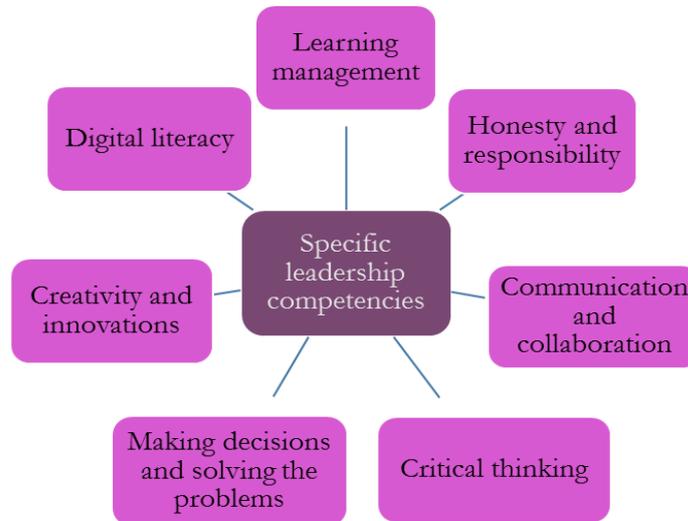


Figure 1. Leadership competencies

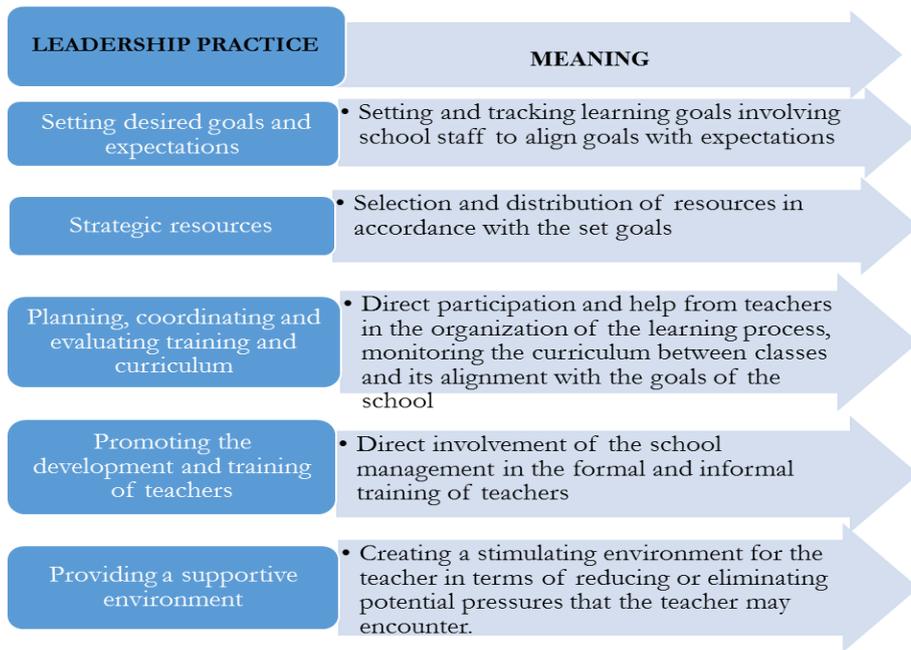


Figure 2. The effect of leadership practice

The system of modern methods and technologies as an effective means of implementing the educational function of teaching history

Abstract: Even though professional circles and methodological literature present various views about the forms and methods of teaching and learning organisation, the dominant perspective remains that a lesson is the primary form of educational work organisation. The structure of a history lesson is different, based on its problem-chronological difference. That is why history teachers face various challenges, such as the social and political, economic, historical and cultural life of the country. Modern methods and technologies are useful tools for handling those issues effectively. This article discusses the use of different modern methods and technologies for teaching history effectively in a stress-free and student-centered environment. The authors conclude that the system of modern methods and technologies is an effective means of implementing the educational function of the history course. The methods and technologies included in that system cannot ensure the effectiveness of solving educational problems in isolation.

Keywords: modern methods, teaching history, modern technologies, tools, challenges in teaching history, educational challenges, history lesson.



Introduction

Even though professional circles and methodological literature present various views about the forms and methods of teaching and learning organisation, the dominant perspective remains that a lesson is the primary form of educational work organisation. What is a lesson? A lesson is a complex implementation of active learning processes conducted by a consistent group of students, guided by a teacher, within a set timeframe. Given this definition, it is clear that the structure of a history lesson differs from others due to its problem-chronological principle. Events and phenomena from each historical segment of human civilization and societal development are presented as a cohesive unit. The interrelations between laws and patterns are established progressively, lesson after lesson, in alignment with the content. Consequently, history educators handle various broad segments of historical issues, including:

- Social and political life of the country and its people.
- Economic life of the country and its people.
- Historical and cultural life of the country and its people.

Modern methods and technologies serve as effective tools to fulfil the educational goals of the history course. Their main aim is to create methodological and technological conditions that help in absorbing historical content honing abilities and shaping student' value orientations. This educational process spans the entire history curriculum and follows consistent stages.

When employing modern methods and technologies in history lessons to address educational challenges, the emotional student experiences play a crucial role. These emotions and sentiments influence their interpretation of historical truths, facts, and phenomena, and their attitudes towards notable figures, heroes, and leaders. Thus, the mental experiences of

students hold significance in shaping their value perceptions toward historical realities. V. Bepalko asserts that to invigorate students' connection to the imparted knowledge, educators must stimulate both their intellectual and moral sentiments (*Bespalko, 1993, p. 12*). Similarly, V. Slastenin and G. Chizhakov argue that diverse teacher interventions in history lessons require proper methodological and technological support (*Slastenin & Chizhakov, 2003, p. 186*). The teacher's role is distinctive, and they must be adept at employing educational methods and technologies to influence student' inner worlds effectively.

In history lessons, emotional manifestations represent student' genuine perspectives on meaningful historical entities and phenomena. As students study historical facts and events, they develop feelings and also showcase emotions. These emotions convey content, while feelings communicate the nature of that content.

Modern methods and technologies in history education are worth utilising intentionally to yield more tangible outcomes. Studying history promotes patriotism, respect for national traditions, symbols, rituals, and the value systems establishment. The history aids content in addressing these educational challenges. The overarching goal of history education is the holistic development of a student, equipping them to establish and nurture socially active relationships. Consequently, each historical topic can serve as a methodological and technological instrument for specific educational purposes. For instance, ancient Greek democracy and the Roman Republic offer rich content to cultivate civic responsibility and initiative in students. The history of the Middle Ages encourages the development of humanitarian qualities and tolerance.

In assessing modern methods and technologies for history education, it is vital to pinpoint the primary educational objectives for each thematic section. For instance, military topics prioritise patriotic education, social movements emphasize civic education and cultural subjects focus on aesthetic education. The expansion of educational goals within the history curriculum follows some approaches and orientations facilitated by various historical courses, lesson processes, and the methods and technologies employed.

For instance, while exploring the bourgeois revolutions in Europe during modern history, students cultivate a respectful view of nations that battled for their rights. Information about the Jacobin dictatorship highlights the importance of aligning political goals with their means, and teachers use educational methods to present facts that foster students' aversion to violent tactics.

Among the modern methods that facilitate educational influence in history are:

- emotional-imagery influence methods;
- content creation methods;
- evaluative statement formulation regarding the educational potential of history.

By using emotional imagery methods, teachers enable students to empathise with the emotions of others, fostering their understanding and connection. It is achieved through:

- verbal and visual presentations, storytelling, or emotional descriptions;
- observing, reading, and discussing images, video clips, historical fiction, novels, poems, music, or paintings.

Debates are an effective tool for shaping evaluative judgments, but teacher' goals and personal values must align. For instance, instilling democratic values using authoritarian methods would be counterproductive.

The educative aspect intrinsic to history arises from the subject matter itself, as past events recorded by historians inherently have educational significance and impact students emotionally. Timeless literary and artistic figures have sought inspiration from history, crafting masterpieces based on historical instances. The historical knowledge rooted in collective memory holds immense value and, under the right circumstances, can wield significant political influence. For example, as noted by O. Bismarck, the Austro-Prussian War of 1866 was won by Prussian soldiers, but Prussian history teachers significantly contributed to that victory.

Recognising that future visions are grounded in last memories, history lessons should encompass the entirety of historical experiences rather than isolated periods. Historical events like the World Wars and the Artsakh War become sources of moral rejuvenation for students. In this context, feelings serve multiple functions, including evaluative, motivational, informational, regulatory, and heuristic roles. History teaching that resonates with students enhances the efficacy of the educational process. Historical information, skills, and abilities conveyed through emotions are often more profoundly perceived, internalised, remembered, and creatively utilised. For example, if students were to metaphorically participate in battles led by Alexander the Great or join Soghomon Tehleryan in his actions against Talaat Pasha, the emotions from those moments would leave an indelible mark on their memories.

Educational interventions in history lessons aim to shape worldviews, moral norms, and spiritual and value orientations. While this is more intricate than mere knowledge assimilation, without knowledge, no educational process can be effective. Among the principal methods to convey historical knowledge, I.D. Kovalchenko lists:

- histogenetic,
- retrospective,
- historical-comparative,
- historiographical,
- historical classification,
- term analysis (*Kovalchenko, 2003, p. 486*).

The histogenetic method is predominant. Its educational function lies in unveiling the ever-evolving historical reality and the qualitative features of developing social relations. It is analytical-inductive by nature and descriptive in presenting information on the examined historical reality. Using this method, teachers can elucidate cause-effect relationships inherent in historical ones.

In solving educational challenges using the historical system method, we consider historical objective reality from the viewpoint of its internal mechanisms of coherence and realisation. This approach anticipates the development of historical knowledge, skills, and abilities through the application of methodological and technological systems that encompass various educational components and properties while also revealing their interdependencies.

When employing the historical system method to address educational issues, it is crucial to recognise the significance of the overarching narrative of human and societal history during the

specific period under study. This narrative is a vital broader scientific worldview component. It holds substantial educational value. The comprehensive portrayal of human and societal history encompasses prevailing notions about society, established relationships, means of acquiring and justifying historical knowledge, values, norms, traditions, concepts, and paradigms. These elements are shaped by the spatial and temporal context, influencing how educational issues are framed and the strategies selected for their resolution. In this process, historical knowledge and educational objectives are aligned, refined, regulated, and justified, incorporating both empirical facts and emotional elements.

The method to analyse historical terms and concepts aims to interpret these elements in historical texts and to understand their precise meanings. It is significant to recognise that as social relations evolve, associated values, morals, historical contexts, cultural nuances, and linguistic meanings also change, impacting the resolution of educational challenges. Additionally, historical terms and concepts may carry varied meanings, necessitating careful analysis by students.

In this context, the contributions of German historians B. Niebuhr and T. Mommsen are noteworthy. Utilising advancements in classical philology and comparative linguistics, they investigated social phenomena of the ancient era. Through topographical (toponymic) analysis, they elucidated geographical names found in historical texts, aiding in the accurate historical-geographical maps creation. This methodological approach has also found application in names and surnames analysis (onomatopoeia or anthroponomic analysis), deemed a valuable resource for historical understanding.

We concur with numerous historians, educators, and methodologists asserting that forming a student's historical knowledge and addressing educational problems necessitates an individualised approach. It involves considering each personal student's experience, knowledge base, and personal qualities. Critics often argue that neither historical researchers nor history teachers can be entirely objective emphasising that historians invariably interpret history through the lens of their own time. While there is some truth in this assertion, it is also true that educators continually acquire new knowledge and tools, enabling fresh perspectives on history teaching.

In conclusion, historiographical methods significantly contribute to resolving educational challenges in history education, highlighting the intricate interplay of individual and collective experiences, just like objective and subjective interpretations.

Pedagogical methods in teaching history

It is necessary to analyse pedagogical methods in teaching history.

1. *Method of persuasion:* Teachers should aim to convince students through understanding and respect for their beliefs, rather than through argumentation. Historical examples of successful negotiations can be instrumental in this process.
2. *Pedagogical requirement:* This method involves thoughtfully formulated demands that stem from the nature of the situation and aim to stimulate students' self-educational drive. These demands can be direct, indirect, or mediated.
3. *Method of coercion:* Occasionally, educational problems may necessitate a degree of coercion to ensure students' engagement and prevent undesirable outcomes.

4. *Correction and encouragement*: These are crucial educational interventions. Correction aims to deter negative behaviours, while encouragement seeks to promote positive attitudes and actions.

The modern methods mentioned above were considered effective means of implementing the educational function of the history course, and as G. Edilyan writes. “The teacher has some freedom even if the mandatory method is used... The method that suppresses the teacher's personality is bad”. It is desirable to “maintain the teacher’s freedom... the opportunity to make a choice”, because the teacher is “not a slave to the method, didactic rules”. “The teacher should adapt the method to the material and adapt the method and the material to the mental development of the students, and to ensure the assimilation, the inquisitiveness of the children should be encouraged and encouraged (*Simonyan, 2006, p. 217*).

Educational technologies and methods are essential for realising the educational potential of history lessons. They should be adapted to the material and the student’s cognitive development, promoting active inquiry and engagement. In this endeavour, preserving the teacher’s autonomy is paramount, as it ensures the adaptability and effectiveness of the educational approach.

Educational technology, crucial for enhancing the educational function of history courses, comprises a system of tools, techniques, and methods. These have been developed and empirically tested by pedagogical science theorists. It includes clear objectives and a structured, step-by-step approach to activities conducted by teachers aimed at achieving these set goals. Drawing from our experience and the subject’s specificities, we have identified modern technologies most effective for addressing educational challenges encountered during history lessons.

The system of modern methods and technologies of teaching history formed by us also includes the following technologies, described below.

Educational technology of collective creative activity (*Ivanov, 1989, p. 278*). This technology is based on the organisation of the joint activities of the teacher and the student, in which case both parties get the opportunity to be full participants in the process. The conceptual provisions of the educational collective creative activity technology are:

- ensuring the involvement of all students in the course of continuous improvement of the history course;
- their active participation in solving emerging educational problems;
- the manifestation of an approach based on the collective-active principle to the complex education process, which implies collective goal-setting, collective organisation of activities, collective creative-active activity, formation of emotional bonds, a complex approach to education, personal growth of students and social action, an individual approach to promotion and encouragement.

Collaborative technology is considered both a parenting and learning technology, as it is considered “penetrating”, it has been widely used in the whole pedagogical process (*Jonson & Jonson, 1985, pp. 11-13*). The “pervasive” nature of the technology is due to its presence in all modern technological works. The goal collaborative technology orientations are:

- the transition from the authoritarian style of education to the democratic, technological and charismatic styles;

- manifestation of humanitarian-human-centred or individualised-feminised-personal approaches to students on the part of the teacher in the process of solving educational problems;
- interaction based on the teaching and upbringing unity principle in the subject-subject system.

The conceptual collaborative technology provisions are:

- formation of students' knowledge through the development of cooperative abilities,
- considering the person and individuality of the students as the primary subject of the educational system,
- the development of multi-perspective thinking and the establishment of intercultural ties through the formation of cooperative abilities, historical-cultural, national and universal values,
- the comprehensive formation of each learner in the collective and groups through the collective and groups.

One of the founders of philanthropic-personal or "School of Life" educational technology is Sh. Amonashvili (*Amonashvili, 1986, p. 188*) and A. Belkin (*Belkin, 1991, p. 176*). In the views of these authors, two principled approaches are touched upon: the uniqueness and originality of the learners and the unqualified attitude of the teachers towards them. Sh. Amonashvili and A. Belkin, as a result of their many years of pedagogical experience and extensive research, proposed the following conceptual provisions:

- ensuring the continuous progress of student' education, development and establishment;
- the service of the school of life to the process of student' self-education, self-development and self-improvement.

The technology of free education belongs to the group of humanitarian-individualised technologies and emphasises the identity of learners and their right and freedom to make choices in all spheres of life and activity. The peculiarity of this technology is that by making this or that choice, the learner strives to achieve his goal not under the influence of external impulses but of internal demands. Authors of free education technology M. Montessori and O. Gazman (*Kazakova, 2000, p. 308*) proposed the following conceptual provisions for the implementation of technology:

- creation of favourable pedagogical conditions for student' self-expression,
- the formation of their bright personality,
- establishment of a success position in them,
- eliminating the psychological barrier between the teacher and the students,
- creating a mutual trust and support atmosphere.

Pedagogical support technology was developed and circulated by N. Kuzmina and A. Rean (*Kuzmina & Rean, 1995, p. 251*). This technology is often identified with the technology of pedagogical expertise because in the process of history and, in particular, in the conditions of the emergence of educational problems, students feel the need for the teacher's support. The authors of the technology, based on various pedagogical and methodological concepts, put forward the following conceptual provisions:

- showing respect for student' personalities in the process of solving educational problems,

- preservation of pedagogical behaviour and communication ethics and demonstration of pedagogical tact,
- increasing the self-esteem of students as a result of solving the educational problem.

The author of moral education technology is A. Shemshurina (*Shemshurina, 2000, p. 279*). This technology is aimed at forming the moral value system of students. It is worth noting that this technologist is especially evident in the course of history classes and the results of its application because the subject as a whole, along with its educational potential, is a powerful factor in forming the moral value system of students. Based on these observations, the moral education technology conceptual provisions and value orientations were defined. They are:

- education of patriotism among students,
- formation of student' civic consciousness,
- coordination of student' rights and responsibilities,
- educating students to have a sparing and tolerant attitude towards nature and the world around them.

Technologies for solving educational problems in the history lesson process include the following systemising components:

- setting lesson goals, designing interactive methods and aids for presenting the topic,
- selection of class and arrangement of its structural elements,
- organisation of cooperative work among students,
- promotion of cognitive and cognitive activity of students,
- management of student' emotions, management of emotions and control of behaviour patterns.

The content of technologies for solving educational problems in the course of history includes:

- scientifically substantiated publicised requirements,
- transfer of historically formed social experience,
- analysis of the educational situation, search for solutions,
- pedagogical support,
- creating a position of success.

It is effective to apply the following educational technologies in the process of solving the educational problems arising in the course of history to reduce the mental tension between the opposing parties.

- group (B. Volkov (*Volkov, 2007, p. 96*) and I. Ivanov (*Ivanov, 1989, p. 278*)),
- communicative training (N. Shchurkova) (*Shchurkova, 2005, p. 256*),
- position of success (A. Kazakova) (*Kazakova, 2000, p. 200*),
- formative educational (I. Yakimanskaya) (*Yakimanskaya, 1996, p. 347*),
- formation of mental actions (P. Galperin) (*Galperin, 1989, p. 152*).

Effective use of all the above-mentioned methods and technologies to solve educational problems arising in the course of history requires a step-by-step approach from the teacher. First, there is a need to make a substantive diagnosis of the created situation and the causes of the problems that have arisen, as a result of which the motive for the emergence of the problem is revealed, the predispositions and positions of the conflicting parties are analysed, the

methodological and technological tools for achieving solutions are clarified and favourable ones are created for their application pedagogical conditions. Second, the educational goal of solving the problem is specified. Thirdly, the teacher demonstrates certain reflexive actions, according to which, to solve the problem, he can use the effective innovative experience of his colleagues. Then there is a transition to the correction and adjustment stage, in which the professional teacher expertise level is measured based on the obtained results. It implies effective interaction between the teacher and students in different educational situations. In the history lesson process, these situations are most often modelled by the teacher to create an educational and formative environment with the influence of historical events, facts, phenomena, faces and cases. It is also noteworthy that every problem of an educational nature arises around this or that historical object, which can have both material and spiritual value, as well as the conflicting or conflicting interests, positions, and opinions of the teacher or students in the field of history, the result of studies and research. Based on our teaching experience, we can say that educational problems arising in the history lesson process are mainly functional, behavioural and interpersonal in nature. As a rule, the problems of educational activity arise from students' failure to complete this or that task, frequent absences, and lack of a sense of responsibility. Educational behavioural problems are most often caused by poor student behaviour. Based on Methodists B. Likhachevi (*Likhachev, 2001, p. 607*), A. Timoshenko (*Tymoshenko, 2000, p. 246*), A. Furnham and T. From the basic research conducted by Yazdanpana (*Furnham & Yazdanpanahi, 1995, pp. 73-80*) in this field, we can distinguish the levels of targeted implementation of the educational technologies selected by us at different stages of solving educational problems arising in the course of history. In our opinion, the information empirical perception, assimilation and reproduction process on educational technologies shows the adaptive-reproductive level of their selection and targeted application. Therefore, the teacher, getting acquainted with the theoretical foundations of educational technologies, can distinguish not only the techniques of their application but also create favourable pedagogical conditions, and then the constructive-analytical level of their selection and targeted application is demonstrated. Here, at the creative-innovative level, the teacher knows the processes of discovering the essence of educational technologies, diagnosing the educational problem, solving it, and creatively using the obtained results.

Conclusion

It is obvious that educational problems in the history lesson process arise when students are faced with the need to use old, already acquired knowledge and abilities in new conditions, when there is a conflict between the result of the practical performance of the educational task on the historical material containing educational elements and the lack of relevant knowledge of the students. And so, especially in the course of history, the introduction and application of educational technologies are more complicated, conditioned by the influence of the studied historical content on the cognitive and emotional spheres of the students, the peculiarities of the educational situations that arise during the interpersonal relations between the educator and the educated. Based on the above analysis, let us try to define the educational technologies used in the history lesson process. In our opinion, every educational technology used in the course of history is a collection of the most effective and modernized techniques and methods of

history teaching scientifically based, equipped with conceptual provisions and guided by value orientations, which contributes to the formation of universal, historical-cultural and moral values among students. As the reader has seen, the application of modern methods and technology systems as an effective means of implementing the educational function of the history course is based on the principles of the management of the complete educational system. Forming the system of modern methods and technologies for solving educational problems in the history lesson process and applying it during our pedagogical activity, we were guided by the following principles of educational system management: goal setting and formation of a favourable educational environment. Thus, we can conclude that the system of modern methods and technologies is an effective means of implementing the educational function of the history course. The methods and technologies included in that system cannot ensure the effectiveness of solving educational problems in isolation.



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*Mustafa Shefket*⁶¹

Establishing several features in the training of football referees in the Republic of Bulgaria

Abstract: The development of the football game imposes significant demands on the referees. Applicants for the respective categories must meet certain conditions, such as not only mastering the rules of the game, but also possessing knowledge of the English language, to be physically and mentally prepared. In this aspect, an electronic questionnaire aimed at Bulgarian football referees has been developed. It contains questions bearing information about the social and demographic characteristics of the people examined, about the difficulties in terms of physical and theoretical preparation of the respondents, as well as for the practical application of the rules of the football game on the field. The study subject is the football game. The study object is the signs characterizing some peculiarities in the training of football referees in the Republic of Bulgaria. The study purpose is to reveal some peculiarities in the training of football referees in Bulgaria. The results are being analyzed, conclusions and recommendations are being formulated.

Keywords: football, football refereeing, rules of the football game, physical and theoretical training.



Установяване на някои особености при подготовката на съдии по футбол в Република България

Резюме: Развитие на футболната игра налага съществени изисквания към реферите. Кандидатите за съответните категории трябва да отговарят на определени условия, като освен владението на правилата на играта, в това число да притежават знания по английски език, да са физически и психически подготвени. В този аспект е разработена електронно анкетна карта, насочена към български рефери по футбол. Тя съдържа въпроси, носещи информация за социално-демографските характеристики на изследваните лица, за трудностите по отношение на физическата и теоретичната подготовка на респондентите, както и за практическото приложение на правилата на футболната игра на терена. Резултатите са анализирани и са формулирани изводи и препоръки.

Ключови думи: футбол, футболно съдийство, правила на играта футбол, физическа и теоретична подготовка.



Introduction

The development of the football game imposes significant demands on the referees. “Football refereeing is a major factor not only for the proper running of the game and the regulating of the relationships between the players, but also for its qualitative stimulation. Therefore, refereeing is the object of extremely great attention among the world’s sport community” (*Ignatov, 2021, p. 15*).

While at the beginning of its development football managed without a referee, only with

an agreement between the captains of the two teams, “as time went on, when honors and rewards acquired a role for the participants and victory became important, it began to resort to a person who receives trust and who, could reach an agreement between the parties, in controversial moments. This is how the figure of the arbitrator was born - without having an official appointment and without having the figure of an athlete” (*Tsanev, 1992, p. 9*).

Football life in Bulgaria gives a positive impetus to the appearance and development of football refereeing. According to Dimitar Tsanev, “in the early period of the development of Bulgarian football, this role was usually assigned to the most prepared teachers, football players and activists. The determination of the referee took place according to mutual agreement of the two clubs, as the main criterion for his selection was to have trust in him” (*Tsanev, 1996, p. 21*). “The year of 1920, marks the beginning of football refereeing. The first Referee Section (for football and basketball) was created in Sofia” (*Sbopov, 2009, p. 22*). “The referees for football and basketball – both men and women – entered the collective Refereeing Board, and later on 2.12.1924 the referees for ice hockey and tennis joined, and on October 6, 1926, also the referees for hazen” (*Tsanev, 1996, p. 23*).

In modern sports society, according to the Rules for Football Refereeing in Bulgaria, legal capacity is acquired after completing a training course for a football referee and successfully passing an exam, subject to the following conditions:

- Possess Bulgarian citizenship or be permanent residents of the country;
- Be 16 years old or turning 16 in the year of application;
- To have completed primary education;
- Not have been convicted of an intentional crime, regardless of subsequent rehabilitation;
- To be physically and mentally healthy.

Those who wish to participate in a training course, which is organized by the District or Zonal Council of the BFU (ZRC or RRC), together with the Manager of referees – in amateur football. The training takes place within a minimum of 15 studying hours. The training program includes lectures on the Rules of the Game, on the internal acts of the BFS and the relevant ones national and international acts and practical classes.

After completing the course, a theory exam is taken, which includes questions from the Training Program and a test to assess one’s physical condition according to a standard approved by the RC at the BFU. The organizer notifies each candidate of the date, place, and time of the test at least three days in advance. The exams are taken in front of an exam committee consisting of three members, determined by the RC at the BFS. A candidate who has successfully passed the theory test and the physical fitness test receives a certificate of completed refereeing course. A candidate for a judge is registered in the relevant District / Zonal Council of the BFS (RRC or ZRC) based on a written request. The certificate for completed referee course is attached to the application.

Refereeing has the following categories in descending order:

1. International judge;
2. International Assistant Judge;
3. Referee or Video Assistant Referee (VAR) in First professional league;

4. Assistant Referee or Assistant Video Assistant Referee (AVAR) in First professional league;
5. Head referee in the Second Professional League;
6. Assistant referee in the Second Professional League;
7. Head referee in the Third League;
8. Assistant referee in the Third League;
9. Head referee in Elite youth groups U-19, U-17 and U-15;
10. Assistant referee in Elite youth groups U-19, U-17 and U-15;
11. Judge, supervisor or assistant in Zonal Championships;
12. Judge, leader or assistant in District Championships.

Candidates for the respective categories should meet certain conditions, such as mastering the rules of the game, having knowledge of the English language, as well as to be physically and mentally prepared. In this aspect, an electronic questionnaire aimed at Bulgarian football referees has been developed.

The study purpose is to reveal some peculiarities in the training of football referees in Bulgaria.

The study subject is the football game.

The study object is the signs characterizing some peculiarities in the training of football referees in the Republic of Bulgaria.

Contingent of the study is about 48 football referees.

A survey was conducted with over 50 football referees in the period of February 2023 – May 2023. Their participation in the study is voluntary and anonymous. 48 survey cards were filled incorrectly.

To achieve the study purpose, the following tasks were set:

- create a survey card in an electronic environment;
- conduct a survey with football referees;
- summarize and analyzing the obtained results;
- disclose conclusions and recommendations for practice.

In addition to the proposed answers, it is possible to formulate one's own opinion, as well as to select more than one answer to some of the questions. This is also the reason for the total percentage of a question to exceed 100%.

The first part of the survey card contains questions bearing information about the socio-demographic characteristics of the surveyed persons – age, educational level, experience, type of settlement. The second part groups questions that explore difficulties in relation to the physical and theoretical training of the respondents, and the third set of questions completes the profile of the football referee in terms of motivation for self-training, search for opportunities for realization and relations with the members of the colleges.

Results analysis

The results of the answers to the questions related to the socio-demographic status of the respondents (from the first to the fifth question in the questionnaire) show the following - the age of those who filled out the questionnaire varies from 24 to 50 years, with the largest share

being 30 of them between 20 and 30-year-old, 50% of respondents live in settlements under 50,000 residents, five have master's degrees, seven of them have completed secondary education, and the rest have bachelor's degrees.

An important part of the practice of refereeing is communication. Given the entry of a large number of foreigners into the Bulgarian championship, as well as the fact that the command of the English language is a mandatory condition for moving to an international category, the poll has included the proposed question "What level do you speak English at?". The answers to this question are depicted in Appendix (*Figure 1*).

As can be seen from the figure, the largest percentage - 38% of those surveyed share that they have an "average" command of the language – this answer leads to the conclusion that they most likely did not attend a training course and accordingly do not have a document certifying the corresponding level, this applies to all who answered low, good and excellent, i.e., in our opinion only twelve of the respondents have a certificate of completion.

Figure 2 illustrates the respondents' answers regarding their current development as a football referee. As can be seen from the figure, 32 of them serve amateur football (AL), the remaining 16 are in professional football (PL), 20 are referees (R), and 28 are assistant referee (AR) (*Figure 2*).

The real difficulties of refereeing in football are to a large extent the high dynamics, the rapid change of game situations where referees are expected to make absolutely impartial and error-free decisions, to the great physical loads that referees have to endure during the match, as well as the psychological tension and responsibility for the decisions made. "The mental load that a football referee endures during a match, and often after it, is huge. He can never become a crowd favorite. It quickly forgives and forgets even the most incredible mistakes of her idols – the football players. Having unlimited power on the field, the football judge has done his work best when he has exercised it almost unnoticed" (*Rusev, 1998, p. 11*).

Some sports experts argue that the sports referee should be able to put himself in the place of a player or coach, which will allow him to correctly assess their behavior in each specific case, considering all the nuances, maintaining objectivity, calculating pros and cons and finding the optimal solution.

A variety of referees' responses was observed regarding the following questions from the second group of the questionnaire, informing about the difficulties in the process of refereeing practice. Regarding the specifics of football refereeing, one of the most important criteria is physical training, and it is subject to inspection by the Refereeing Commission and the fitness instructors of the Refereeing Commission four times a year.

To the question "How many times do you train a week?", six referees answered one, two and five times a week, at most – 16 of them train three times a week, and only two of them – six (*Figure 3*).

Related to this question is the inquiry "In what manner do you train?", the answers to which are shown in Appendix (*Figure 4*). The analysis shows that 34 referees train alone and 24 do in a group. The number exceeds 48, as some of them specified both forms of preparation.

According to G. Ignatov "The physical training of referees solves two main tasks: 1. Comprehensive development of the motor system; 2. Improvement of specific motor abilities" (*Ignatov, 2021, p. 140*). The test of Cooper is the main criterion for determining the physical

fitness of the judges until 2007. Later, before the actual test, a shuttle run of 4 x 10 meters is held for 12 minutes, then another change comes 4 x 10 meters, 1 x 1400 meters, 2900 meters in 12 minutes. At the time of research, 2 x 50 meters (each run in 7.5 seconds, 2 x 200 meters (each run of 200 meters in 35 seconds), 2900 meters in 12 minutes. Since the 2008/2009 season, 2 tests have been introduced by FIFA – sprint 6 x 40 meters in 90 seconds walking and returning to the starting position and endurance – 150 meters smooth running and 50 meters walking in the execution of the tests, norms with different values for men and women, as well as for profiling the referees, have been adopted. 2020/21 year, judges cover the following physical standards: R – 2 x 40 meters and SDS, and AR – CODA, 2 x 30 meters and ARIET.

The next question “Do you have difficulties meeting the physical standards?” provides evidence that six of the respondents have difficulties every time, the answer “sometimes” was chosen by four referees, two – mention that if they are injured, they cope with difficulty, and all the others indicate that they do not encounter any difficulties. None of the interviewed referees have trouble in covering the theoretical exams – question 10 of the questionnaire, and all declare that they monitor the changes in the rules of the game.

The next group of questions provides information about the mastery in the theory of the rules for the game and their application on the field. Of interest are the answers to the question “How often do you enrich your theoretical knowledge?” (*Figure 5*). The respondents indicated the proposed options almost equally. The fact that 29% of the respondents remember the rules of the game only before the theory exams announced by the judges’ committee is alarming. The information provided by the answers in the next question “Do you participate in training seminars?”, is also related. As can be seen in Appendix (*Figure 6*), ten of the referees never attend seminars, 18 of them attend all the ones announced, and the rest choose the answer “sometimes”.

The most difficult rule to interpret is rule 12 “Foul play and misconduct” (16 respondents indicated this in their answers), rule 11 “Ambush” was noted by ten of them, and the rest did not encounter difficulties (*Denev, 2018, pp. 87-88*).

These data also correspond with the results obtained from the question “Are you provided with enough information regarding the knowledge of the rules of the game?”, as on this the referees almost unanimously gave the opinion that they receive regularly accessible information, only two have a contrary judgment.

According to V. Zhechev, “the general values and norms, patterns of thinking and behavior characterizing the culture of modern society are manifested in a wide variety of specific features valid for certain social groups and are expressed in their style and way of life” (*Zhechev, 1998, p. 12*). “Personality is considered in the process of its development in a specific group in interpersonally and intergroup interaction, and the social group is considered as a small meso- or macro-group” (*Aleksieva & Kirov, 2019, p. 72*). According to one united classification of social groups, the group is considered as the association of human individuals with the same or the same social position, equal social status or approximately equal, the same object of activity or the same interests that usually unite people in groups (*Markov, 2014, p. 47*). It is therefore inevitable to examine the relationships within the Football Referees Guild. Forty of the people surveyed choose the answer “friendly”, while the rest stop at “professional”.

The training of soccer referees is one of the key issues guaranteeing the adaptation of the

soccer player subject to the specific requirements set by the soccer game. The professionalism of the judge largely determines the level of performance of the contestants during a match.

“The bidirectionality of the stress-satisfaction relationship has been proven. Stress in the work environment causes a decrease in satisfaction, and dissatisfaction becomes additional source of stress. In this sense, satisfaction should be considered as a consequence factor of stress” (Gecheva, 2015, p. 180). The next question from the questionnaire “Do you think you have reached the maximum in your development as a judge?” is also in this aspect. The answers given are 20 positive, two respondents answer that they have no opinion, the rest indicate that this maximum for them is yet to come.

The position of those surveyed about the profiling of judges is almost categorically the opinion that they like it – 38, eight did not give a positive vote, and two have no opinion.

In relation to the question “Do you have difficulty meeting the physical standards?”, there is also the question “Which aspects of your training do you find weakness and where do you find the necessity to direct your attention in?” After a graphical analysis of the previous question is presented in Appendix (Figure 8), from the review of Figure 9. it is clear that despite the respondents’ statement that they do not encounter difficulties in meeting the physical standards, 56% of them understand the need to increase their workload during training, four each indicated other topics as – mental, theoretical preparation, diet, etc. (Figure 9).

A large part of the referees surveyed (56%) do not encounter any difficulties during a football match, 15% point to the team headquarters as the biggest difficulty, as well as the behavior of some of the football players, hand play makes judgments difficult for four of them, and quick decision-making is not a strong point for two of them (Figure 10).

Conclusions and recommendations

From the summaries made in the text, some basic characteristics can be deduced regarding the socio-demographic profile, the physical and theoretical training of the interviewed football referees, as well as the difficulties they encounter during a football match:

1. The respondents are mostly between 20 and 30 years old, most have a university degree, and English language proficiency is a skill documented only $\frac{1}{4}$ of them.
2. The physical training of the referees is unplanned and without a clear training plan structured according to the stage of the football championship.
3. Participation in seminars to increase theoretical training is not a priority for 63% of them, which naturally leads to difficulties in the conversion of the rules of the game into decisions during a match, with the most complicated being Law 11 “Ambush” and Law 12 “Foul play and misconduct”.

Based on the formulated conclusions, a discussion can be sought to prepare and provide an appropriate training programme according to the sports calendar for holding the football championship under the “autumn-spring” model, which is tailored not only to the training load and its management, but also according to the profiling of referees.



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Appendix

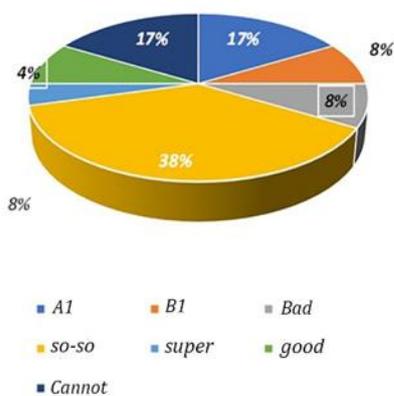


Figure 1. What is level of English proficiency?

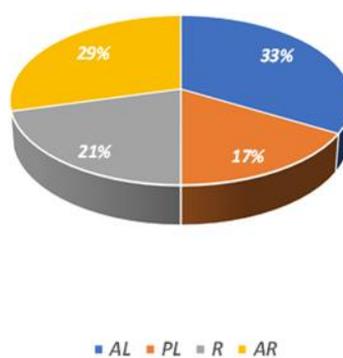


Figure 2. Which referee rank are you?

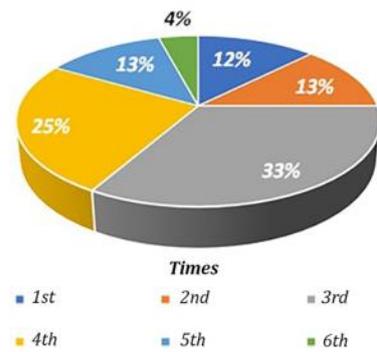
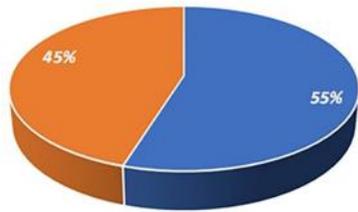
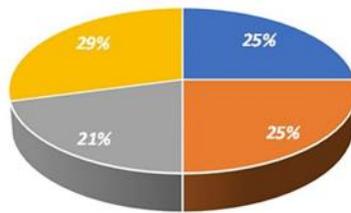


Figure 3. How many times do you train during the week?



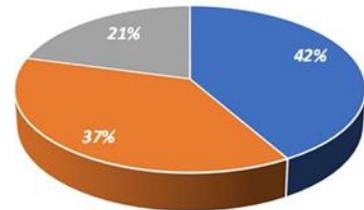
■ individually ■ in group

Figure 4. What manner do you train in?



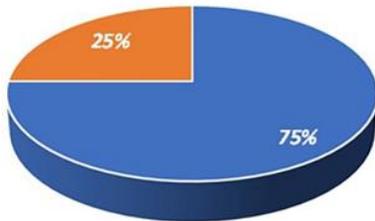
■ often ■ monthly
■ weekly ■ pre-exam

Figure 5. How often do you enrich your theoretical knowledge?



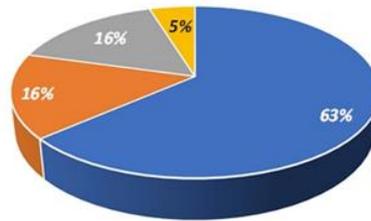
■ sometimes ■ always ■ never

Figure 6. Do you participate in professional development seminars?



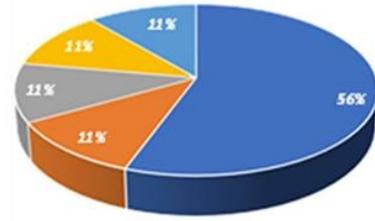
■ one or two ■ several

Figure 7. How many assignments do you get per week?



■ relax ■ massage
■ diet ■ hobby

Figure 10. What difficulties do you encounter most often?



■ physical training
■ mental training
■ theoretical training
■ BM
■ cannot view
■ do not have

Figure 9. In which aspects of your training do you find weakness and where do you find the necessity to direct your attention?

Authors:

^[1] Natalia K. Medvedeva, Postgraduate Student (Economics), St. Petersburg State University. St. Petersburg, Russia.

^[2] Sergey Lebedev, Professor, Doctor of Philosophical Sciences, European Institute for Innovation Development. Ostrava, Czech Republic.
ORCID 0000-0002-7994-2660

^[3] Rositsa Dimkova, Associate Professor, Ph.D., Lecturer in Methodology of Physical Education and Sports, Department of Primary-school Pedagogy, Faculty of Pedagogy, “St. St. Cyril and Methodius” University. Veliko Tarnovo, Bulgaria.

^[4] Samvel Poghosyan, Doctor of Historical Sciences, Professor, Faculty of History and Social Sciences, Armenian State Pedagogical University after Kh. Abovyan. Yerevan, Armenia.
ORCID 0000-0003-2478-1860

^[5] Armine Eprikyan, Ph.D., Associate Professor, Faculty of History and Social Sciences, Armenian State Pedagogical University after Kh. Abovyan. Yerevan, Armenia.
ORCID 0000-0003-2926-3667

^[6] Mustafa Shefket, PhD Student, Department of Theory and Methodology of Physical Education, Faculty of Pedagogy, St. Cyril and St. Methodius University of Veliko Tarnovo. Veliko Tarnovo, Bulgaria.

Citations in APA

Medvedeva, N. K. (2023). The essence and economic features of university innovation infrastructure formation. *Actual Issues of Modern Science. European Scientific e-Journal*, 27, 7-27. Ostrava: Tuculart Edition, European Institute for Innovation Development. <https://doi.org/10.47451/ecn2023-12-02>

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Shefket, M. (2023). Establishing several features in the training of football referees in the Republic of Bulgaria. *Actual Issues of Modern Science. European Scientific e-Journal*, 27, 57-64. Ostrava: Tuculart Edition, European Institute for Innovation Development. <https://doi.org/10.47451/ped2023-09-01>

European Scientific e-Journal

EU, Czech Republic, Ostrava

Publishers

European Institute for Innovation Development
Tuculart Edition

Right to conduct publication activities

IČ: 14207052

Date of Issue

December 20, 2023



EUROPEAN SCIENTIFIC e-JOURNAL

ISSN 2695-0243

DOI 10.47451/col-027-2023