

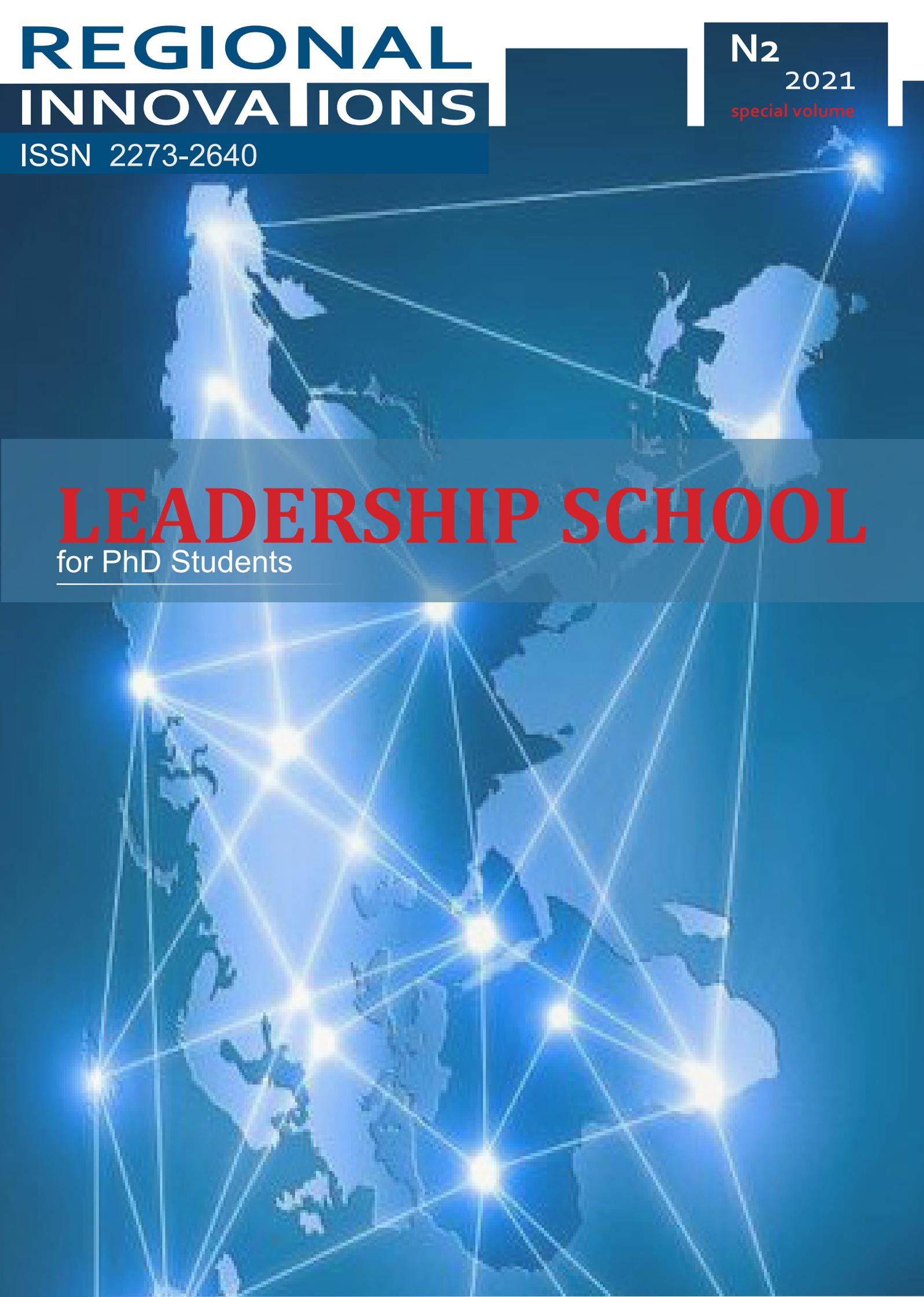
# REGIONAL INNOVATIONS

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# LEADERSHIP SCHOOL

for PhD Students

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## About InterRegioNovation

**InterRegioNovation** is the International Association devoted to the transfer and exchange of knowledge and innovations at all regional levels (country, region, city, community etc.) between knowledge transfer professionals (business, research institutions, policy makers, government agencies, individuals, others) in all countries of the enlarged Europe, CIS countries and from other continents for stimulating and enhancing economic and social growth in the regions.

This is a policy and research association that brings together all knowledge transfer professionals who are interested in delivering efficient, flexible, innovative and cost-effective services across the private and public sectors. We work closely with business, research and educational institutions, government agencies, policy makers, NGOs, media, individuals and other stakeholders to promote the interests of their industries.

Our members understand the changing needs of the transfer and exchange of knowledge and innovations and through continuous professional development, marketing and networking opportunities offered in this association, we keep current with the latest knowledge trends and issues that challenge people in their work and life journey. We also offer expansive opportunities for partner connection through our networks.

Journal "Regional Innovations" is one of the Association's tools for innovators and everybody who is interested in any aspects of innovation development.



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## About journal

On behalf of the Editorial Board, it gives us a great pleasure to welcome you to the second issue of 2021 of the Regional Innovations Journal dedicated to Leadership School for Ph.D Students.

The Regional Innovations publishes original research papers, policy analyses, review papers and book reviews in order to establish an effective channel of communication between business, research institutions, policy makers, government agencies, and individuals relative to the analysis of various aspects of knowledge and innovations transfer and exchange within regional dimensions.

This is an independent, peer-reviewed, Internet-based international journal devoted to publishing original research papers of highest quality, sharing ideas and discussing innovation sector within regional dimensions. The journal welcomes to submit research papers by exceptional innovators, leading universities, globally recognized business, government agencies, policy makers and political leaders.

We intend that our readers will be exposed to the most central and significant issues in innovations development. We wish to publish papers that exemplify the highest standards of clarity, and that promise to have significant impact on existing front-line debates or to lead to new ones. The journal explores key priorities of the knowledge and innovations transfer and exchange in terms of critical aspects of human life (economy, law, science, business, health, education, culture etc.). We therefore welcome submissions not only from established areas of research, but also from new and emerging fields and those which are less well represented in existing publications, e.g. engineering studies, biomedical research etc.

We also strive to ensure that being under expert evaluation, each submission will receive developmental and supportive comments to enhance the article. Our refereeing process will involve that each submission will be reviewed by one or more specialists in the relevant field. Articles will be added to the volumes and the journal audience will receive e-mails updates to encourage them to the new articles.

We are delighted with, and immensely grateful to the large numbers of colleagues, both members of the Associations InterRegioNovation and FranceXP (France), representatives from many universities in France, Latvia, UK, Azerbaijan, China, Nigeria, Belarus, Ukraine and other institutions, who have supported the editorial process. And we are very proud of the expertise that they collectively bring, which we believe is unsurpassed by any contemporary innovative journal.

We are immensely grateful to our colleagues for their support and advice through the process of setting the journal up, and for the confidence they have placed in us in supporting this initiative at a time of economic uncertainty.

In the development of the Regional Innovations to date, we would like to enlist the support of a number of organisations who wish to promote this online journal to their experts. To ensure its sustainability, we would also like to invite other organisations, networks, conferences and meetings to associate themselves with the Regional Innovations. We therefore aim for the Regional Innovations to become the leading online forum to globally disseminate outstanding research papers on innovation sector in regional dimensions. Being an online periodical, the Regional Innovations is also a forum for exchange of imaginative ideas readers wish to share. Contributions of articles on innovations sector and your comments about this issue are very welcome.

To this end, if you lead, represent, or are a member of any such organisation, please contact us to offer your support and commit to promoting the Regional Innovations as a publication outlet for research undertaken by your experts.

We do hope you enjoy and benefit from the Regional Innovations! And many thanks for staying with us in 2021!

**Jean-François Devemy**  
**Editor-in-Chief**

## **About Leadership School for Ph.D Students**

The readiness of a medical university graduate for modern professional activity is determined by presence not only of a certain system of professional knowledge, skills and abilities, i.e. hard skills, but also soft skills. The latter include managerial, leadership, team, communication, public and personal skills, which are essential for successful professional activity, in project management, in making informed decisions in risky situations, especially in a COVID-19 pandemic.

Given the huge importance of soft skills for Ph.D students in medical university, who will join the research and teaching staff in the future after defense of the dissertation, the online educational event "Leadership School for Ph.D Students" was held for the first time at the Kharkiv National Medical University in May-June 2021. International Association "InterRegioNovation" was the official partner and co-organizer of this event. A memorandum of understanding was signed within the framework of the Leadership School for Ph.D Students between Kharkiv National Medical University (Ukraine) and the International Association "InterRegioNovation".

This issue of the Regional Innovations Journal is dedicated to publishing the works of participants and speakers of the "Leadership School for Ph.D Students" and serves as a platform for discussion, as it highlights the point of view of the authors of this event on aspects related to soft skills. The management and staff of Kharkiv National Medical University express their gratitude to the International Association "InterRegioNovation" for assistance in organizing and conducting the "Leadership School for Ph.D Students" and look forward to further fruitful cooperation.

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## **THE ROLE OF THE ACADEMIC LIBRARY IN INFORMATION LITERACY PROGRAMS FOR GRADUATE STUDENTS**

One of the medical university's mission is to provide the country with highly qualified personnel in the field of medical science and health care. To achieve these goals, young scientists need to adapt to research activities to meet their information needs more quickly, using a variety of information. Postgraduate studies offer a unique stage in the development of researchers when they progress from the consumption of knowledge to its production. However, not all graduate students feel confident when doing research, writing academic texts, searching for information as they lack the necessary knowledge to implement their research.

Kharkiv National Medical University (KhNMU) Scientific Library functions not only as an information and resource center of the university, accompanying the educational and research processes, now it is an authoritative expert and consultant in the digital educational and scientific environment. Organizing access to reliable digital resources, monitoring the publishing activity of the university scientists and information promotion of their research results, coordinating the digital archive of the university staff formation, conducting educational, informational activities, using various resources - is an important vector in the library's role as the information support of the research.

Young researchers, in particular graduate students, are always in the focus of the university library. The library staff constantly organize events to acquire the necessary knowledge and skills to work with digital information, to understand and be able to critically evaluate digital and media content, effectively and safely use digital technologies to solve various educational, scientific and professional problems, help build information retrieval

trajectory and publishing strategy based on the principles of academic integrity, development of soft skills.

Participation in the "School of Leadership", organized at KhNMU, is a good opportunity for graduate students to receive direct assistance from the library professionals in acquiring the knowledge and skills needed for young researchers. The staff consider various aspects of the scientist's publishing strategy to prevent academic plagiarism, select scientific journals for publication and signs of predatory publications, focused on the design of literature for scientific works, including the use of citation managers, shared experiences on sources and strategies for finding scientific information, opportunities for scientometric platforms in the research work of a young scientist.

The first lesson from the Scientific Library was devoted to the preparation of a scientific publication, focusing on the requirements of the international standard for authors. Academic publications are an excellent opportunity to demonstrate your research potential and gain scientific authority. The questions every scientist asks himself are generally accepted and do not depend on the field of his research: Where to start? How to prepare a meaningful publication that will be accepted for publication and, moreover, demanded by the scientific community? How to build a presentation competently and publicly present your research? How to establish a constructive dialogue with colleagues? And finally, how to find time for it?

The basis for the formation of a modern specialist image is a triad - fundamental knowledge, professional competencies and the so-called soft skills - a set of super-professional ("soft") skills of personal effectiveness and self-improvement. This involves intensive processes of conscious perception and evaluation of the information, the ability to analyze and use the accumulated potential, adapt to changes and make decisions related to professional activities, especially important for those who are just building their scientific career.

Therefore, the key to a successful publishing strategy is the development and practical implementation of a number of key soft skills, among which are the following:

- skills of effective thinking as a tool of professional development: the ability to generate and implement ideas that are new, original, unique; intellectual curiosity, ability to apply the scientific method, conduct research, objectively interpret hypotheses and results; ability to perform problem search and critical analysis of the information in digital environment; knowledge of the structure of scientific texts, mastery of oral and written scientific speech, the culture of academic writing.

- volitional skills of self-control and self-management as a tool to achieve goals: the ability to be aware of internal conditions, effectively plan your activities and manage time; discipline, responsibility and result orientation; ability to act in unusual situations and make decisions; stress resistance, readiness for routine work and problem solving.

- activity and leadership skills as a tool for management and successful use of available resources: entrepreneurship, ability to manage projects, resources and information flows; tendency to search and assimilate new knowledge and acquire new competencies; the ability to determine personal goals and ways to achieve them, to build your life trajectory, evaluate your own results, learn throughout life; readiness for situational leadership, delegation of authority, providing feedback.

- social and communication skills as a tool for effective interaction and communication: the ability to establish and maintain a constructive dialogue, lead a discussion, work with others for the results, prevent and resolve conflicts, reach compromises; ability to adapt and perform various roles and functions in the team; emotional

intelligence, tolerance for other people's opinions, flexibility and acceptance of criticism; public speaking and self-presentation skills; language training and readiness for intercultural interaction, exchange of information in a written and oral form.

- as soon as a young scientist obtains the first results of his research to be presented to the scientific community through publications in authoritative publications, he faces the question of choosing a scientific journal - which journal to choose. Thus, the Ulrichsweb database, which describes the global flow of popular and scientific journals, currently contains almost 300,000 titles, of which more than 100,000 declare that they are scientific, many of which are electronic, and have an open access policy. Therefore, the choice of publication becomes quite a complex and time-consuming process.

-the inability of a scientist to choose a quality journal for publication can become a highly probable trap of pseudo-scientific publications. Such publications negatively affect their further scientific career. Based on this, the scholar must learn to distinguish between good publishing practices and dishonest policies of individual journals. Another lesson from the library of the School of Leadership was devoted to this issue.

Using scientific citation databases – Web of Science and Scopus, analytical resources for ranking SCImago Journal & Country Rank Journal Citation Reports, Elsevier and Manuscript Matcher Journal Finder services, presented in the End Note Online system on the Web of Science search platform will develop search skills, analysis of professional periodicals. Gradual mastery of these services allows you to select periodicals by citation rate, thematic queries in the form of keywords, to analyze journals by various metrics.

It should be noted that each of the scientific journals presented in the scientific citation databases Web of Science and Scopus has its own format and certain requirements, posted on the journal sites in the section for authors or described in separate "Instructions for authors". There are also requirements to the list of the literature and all references without exception. There are more than 9 thousand styles of articles and references in scientific publications. Using special programs, the so-called citation managers, will simplify the work of citing sources and present a publication with a perfect list of references. They allow you to collect and store references and full texts, organize them in a user-friendly way, design in the desired format.

Acquired competencies in finding and selecting a scientific journal to publish their research results will allow the scientist to exclude non-authoritative journals with dishonest editorial policies and focus on selecting highly cited (highly rated) publications indexed by the world's most famous citation databases Scopus and Web of Sc. Further publications in them will help build a successful personal scientific career.

Due to the rapid growth of information flows and their digitalization, there is a need to develop information and digital competencies in graduate students, not only teaching them to search for information on the Internet effectively, but also to be able to critical analyze it, correctly disseminate and create new knowledge. Libraries are designed to promote the growth of graduate students to real scientists and take responsibility for shaping the information culture of users, helping them to be information-aware in today's digital environment. To do this, it is necessary to study the information needs of graduate students, increase the level of their information knowledge, promote library services and resources.

We understand information literacy as a set of skills needed to search, analyze and use information to create new knowledge. It consists of technological literacy, information ethics, skills in working with online resources and analytical literacy. Digital literacy is a person's knowledge and skills to use information and communication technologies, as well as his ability to perform difficult tasks effectively applying digital environment. This reflects

the view that digital literacy translates into the skills a person needs to obtain information, succeed, communicate with others, find job, economic success, actively participate in the life of a community, networking and further development. It is extremely difficult for people who are not competent enough in digital technologies to act in today's digital world.

Research is becoming an increasingly dynamic network activity with the digitization of large flows of information. The Internet provides access to a variety of virtual information resources. Modern graduate students prefer access to digital network information, so the priority is to master the strategies of effective Internet search. The transition from Google to specialized information resources for information retrieval, namely scientometric databases, can be difficult for unprepared graduate students. We should also remember to raise the awareness of graduate students about the library resources and services in support of the research lifecycle.

The final lesson from the Scientific Library within the "School of Leadership" was a master class in which graduate students of KhNMU gained new knowledge about the sources and strategies of searching for scientific medical information, using digital technologies. Attention was focused on the information potential of the two advanced citation databases Scopus and Web of Science, which contain a huge number of different documents.

Simple examples demonstrated the capabilities of scientometric databases: features of building a search query, using special operators and symbols, expanding and deepening thematic search, analysis of search results, setting notifications of new results in the search query, storing and exporting search results.

Thus, today graduate students need not only to search for information effectively, but also to be able to critically evaluate and analyze it, access and use. The ability to master the skills of effective search, understanding, evaluation and use in the ethical aspect to meet individual and academic needs is fundamental to the training of graduate students, leading to better results and successful research. Graduate students with a higher level of information and digital literacy can get more useful and relevant information.

It is the libraries of higher medical establishments that can help graduate students build a publishing strategy not limited to the use of predominantly global search engines such as Google. Resources creation, introduction of services, as well as the inclusion of library courses on information literacy in the educational process of graduate students can improve their information and digital competencies, expand the range of scientific information retrieval.

Therefore, today academic libraries are introducing new forms and directions of work in the system of digital scholarly communications to solve library and information problems related to the dissemination of knowledge. The spread of digital technologies has led to a change in the forms of service for scientists, focusing on information support of the research, including activities from the formation of resource base, research assistance to teaching basics of digital literacy, development of soft skills, preparation of publications in international journals.

## **LOGICS AND BASIC PRINCIPLES FOR EVALUATION OF QUALITY OF DOCTORS' CONTINUING PROFESSIONAL DEVELOPMENT USING THE ELECTRONIC PORTFOLIO**

Nowadays, during the multi-scale digitalization of society, special attention is paid to the use of modern innovative methods in all areas of development, including both graduate and postgraduate education. Information technologies have changed the world, revolutionized education and changed it for the better [6, 8]. The quantity, quality and variety of information technologies currently offered for education is impressive [2]. And during the COVID-19 pandemic these technologies brought the mechanisms of electronic and remote education in graduate and postgraduate medical education [4, 5]. In this case, there is a need to improve the accounting mechanism, especially the evaluation mechanism of the quality of knowledge in continuing medical education in general. However, the use of electronic portfolio technology has become more relevant nowadays [9] both for formalizing knowledge and competencies, monitoring them and for integral evaluation of the quality of education in continuing medical education.

Now a portfolio is often understood as a web technology that allows a doctor to register all the evidence of their experience, competence and professional success throughout the entire period of professional development.

However, the logics of an average approach to evaluation of the labour efforts of obtaining knowledge for different medical professions, the same approach in measuring related competencies in different medical specializations negates the features of professional activity.

The portfolio is considered as a personal professional-oriented technology, a form of authentic evaluation of the educational results of a doctor's education, an effective means of quantifying educational and professional growth in their continuing professional development.

The portfolio can be used to show the competencies in interdisciplinary and transdisciplinary areas of medicine, as well as the acquisition of non-clinical skills [12]. In many countries a portfolio is mandatory to qualify as a doctor [3]. The portfolio promotes lifelong learning, it allows storing all the evidence of learning for further analysis and correlation with your knowledge and needs for it.

The purpose of the work is to justify the background for creating a new type of portfolio by using methods of data mining of multidimensional information, which is entered into the portfolio.

There are hundreds of characteristics that reliably describe the doctor's work. Therefore, it is quite difficult to give an integral description of the specialist's work. Technically, each characteristic of the doctor's work can be represented by an n-dimensional arithmetic vector, which is an ordered set of n real values of specific measures. They will be the coordinates of a vector. The number of coordinates of a vector will be its dimension. Thus, we have a multi-dimensional, disordered data matrix. These data can also still be

burdened with weight factors of measures that describe the doctor's proficiency, and in addition to the huge dimension, the quantitative evaluation of training procedures is complicated because evaluated content is unstructured and changes rapidly. Uncertainty in a choice of training, training providers certification, quality control systems for training etc. are also the problem. Therefore, there is a need for informal complex measurement, it is necessary to use various evaluation tools, methods of multidimensional analysis, and special methods for integration of scores from different quantitative and qualitative scales simultaneously [11].

But in the modern "Big Data" world a large database is normal. To solve this problem, there are many methods of information processing i.e. data mining methods.

Data mining is a process in which the original data are structured using mathematical and computational algorithms and various data patterns are formed or identified [10]. Taking into account that today any algorithm can provide a valid evaluation of the professional growth of a specialist, we suggest ensemble learning, which is a combination of several algorithms that learn simultaneously and correct each other's mistakes. We think that this approach can provide the most accurate results. Among the many algorithms we consider the most important ones to include in the ensemble are the following:

Algorithm C4.5 builds a classifier as a decision tree. C4.5 was developed by Ross Quinlan. It is used to create a classifier as a decision tree from a classified dataset. A classifier refers to a data analysis tool that takes the data needed for classification and tries to predict the class of a new data. Each data point will have its own attributes, which fully corresponds to our problem. C4.5 builds a decision tree, asks questions about the attribute value and classifies new data according to these values. Decision trees are always easy to interpret and explain.

K-means method creates k-groups from a set of objects so that the group members are as homogeneous as possible. It is not guaranteed that the group members will be exactly the same, but they will be more similar compared to the other group. The k-means method refers to multivariate and multidimensional analysis algorithms. This mechanism can help us to divide the characteristics of a doctor's training and work into homogeneous clusters and then compare them with references.

Apriori Algorithm searches for association rules and applies to databases with a huge number of transactions. Learning association rules is a technique to study relations between database variables.

EM algorithm: the expectation-maximization (EM) algorithm is usually used as a cluster algorithm for identifying knowledge. In mathematical statistics, the EM algorithm is iterative and is used to estimate maximum likelihood when calculating the characteristics of a statistical model with hidden variables.

NaiveBayes algorithm is a collection of classification algorithms. The assumption used by the algorithm family is that each feature of the classified data is independent of all other class features. Naive Bayes is a simple but surprisingly efficient algorithm. The model consists of two types of probabilities that are calculated using training data: the probability of each class. Conditional probability for each class for each value of X. After calculating the chance model, it can be used for prediction using new data using Bayes' theorem.

There are a lot of such algorithms [7,12], but we need to choose an analysis mechanism that will allow us to make the most objective conclusion about the proficiency of the specialist they describe in a short time and take into account all the features of each data set. For this purpose, it is proposed to use both classification and probabilistic estimation methods. The scheme of the machine learning process is shown in fig. 1. This integrati on will allow us to use probabilistic estimates in selected homogeneous clusters to create a complete picture of significant educational outcomes in general.

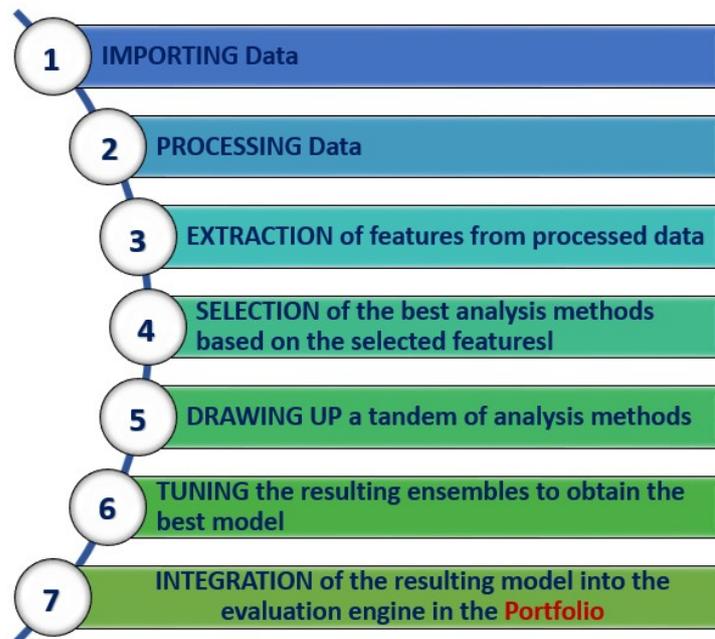


Fig. 1. Scheme of the machine learning process.

## Conclusions

1. A portfolio can become an effective means of objectifying and quantifying educational and professional growth both in training and in the continuing professional development of a doctor when using a fundamentally new data analysis mechanism i.e an ensemble of algorithms for data mining.

2. Taking into account that nowadays any algorithm can provide a valid evaluation of the professional growth of a specialist, we suggest an ensemble learning, which is a combination of several algorithms that learn simultaneously and correct each other's mistakes. We think that this approach can provide the most accurate results.

3. The portfolio has a high potential, but its full implementation requires new approaches, as well as a significant effort and time. Therefore, solving the problem of creating an e-portfolio and its evaluation is an extremely modern and urgent problem.

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## **FORMATION OF PROFESSIONAL COMPETENCIES IN THE STUDY OF A FOREIGN LANGUAGE AT HIGHER EDUCATION INSTITUTIONS**

In the article, the authors analyze the role of learning a foreign language in the training of specialists at higher educational establishments. On the example of Karazin educational and scientific institute of ecology the article traces the accumulation of knowledge of English by the students for all periods of study. This is reflected in the competencies specified in the educational and professional program on specialty 101 Ecology. In addition, the authors outline the areas of language competencies application in training.

Higher educational establishments in Ukraine are currently on the path of active restructuring. It is associated with efforts to increase the competitiveness of graduates in the labor market and meet their expectations of the level of education they received at the university [1]. At the same time, modern society makes high demands on the graduate of the HEE, such as professionalism, social activity, creative approach to work tasks, etc. Training of highly qualified specialists with a good level of foreign language proficiency is becoming increasingly important. This presupposes the need to make changes to the Educational Programs (ED) of various specialties to adjust the list of general competencies [2].

In the updated EPP training of bachelors and masters majoring in 101 Ecology, foreign language learning is laid not only in the competence "Ability to communicate in a foreign language." Since the internationalization of educational activities is not possible without language training, and in our opinion, provides a full acquisition of most general competencies such as:

- Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge / types of economic activity),
- Skills in the use of information and communication technologies,
- Ability to conduct research at the appropriate level,
- Ability to work in a team,
- Interpersonal skills,
- Ability to evaluate and ensure the quality of work performed.

For the formation of these competencies there is a separate block in the structural and logical scheme of the OP specialty 101 "Ecology" (fig. 1). It clearly argues that only the systematic gradual accumulation of knowledge can provide a sustainable level of training for a specialist who is fluent in a foreign language, able to apply their knowledge not only at

the household level but also in the professional sphere, including obtaining information from modern foreign sources and presenting their work outside our country.

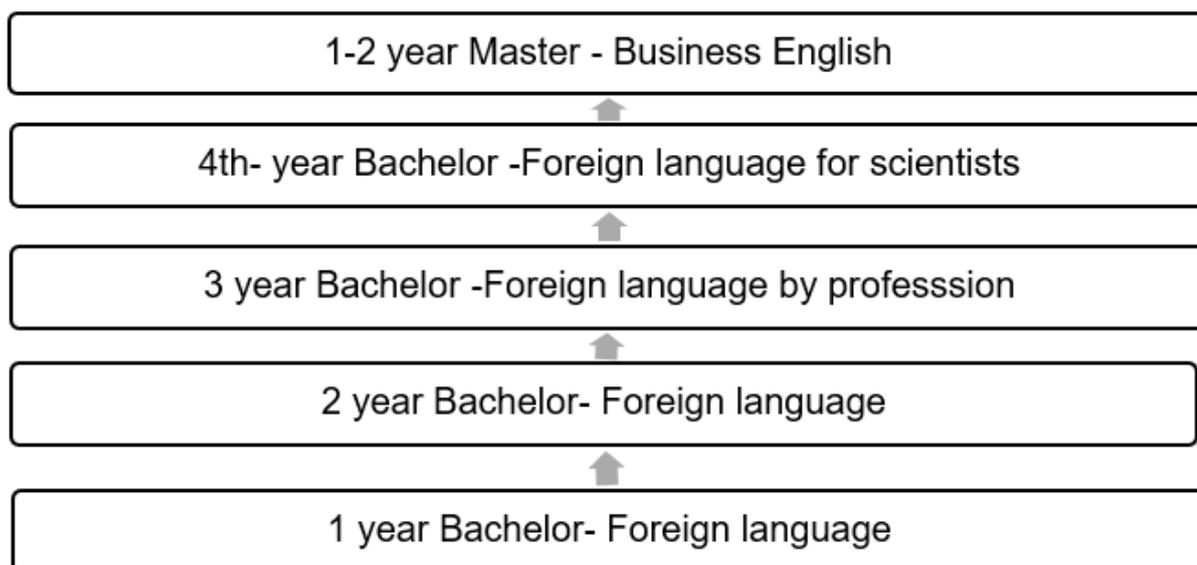


Fig.1. Structural and logical scheme of learning a foreign language in specialty 101 Ecology.

After graduation, bachelors have the opportunity to enter the master's program, but only if they successfully pass an external exam in a foreign language conducted by the Center for Independent Assessment. Thus, language competence is a pass to the highest level of educational qualification - a master's degree. A good result on external testing and admission to a master's degree is a guarantee of the possibility of further study at the graduate school.

An important part of the educational process at the university is the opportunity to participate in the implementation of international grant projects at the Institute of Ecology [3, 4]. Thanks to the good language competencies used by students, they complement the knowledge of professional competencies by communicating with foreign project partners. Let's consider in detail the range of student activities in the main ones.

For several years in a row, the staff of the Karazin Institute of Ecology (former Faculty of Ecology) has been winning grants under the Tempus and Erasmus + programs, aimed at improving the training of specialists at Ukrainian universities.

The international project Tempus "Improvement of education in the field of environmental management" (2009 - 2012) was aimed at improving the system of higher education in the field of environmental management and environmentally friendly nature management, using the experience of the European Union and post-Soviet countries, applying modern management information technologies. During its implementation, a new specialization "Environmental Management and Audit" was introduced at the Faculty of Ecology by the joint efforts of all project partners, which expanded the list of acquired competencies and employment opportunities for graduates. An important condition for studying in this specialization was knowledge of English because some of the disciplines were taught by professors from universities in Austria, Greece, Hungary and Germany.

The next Tempus - the project "Qualifications Framework in the field of environmental sciences in Ukrainian universities" (2014-2017) was devoted to the analysis of existing standards and methodologies for the development of sectoral qualifications frameworks in the field of environmental sciences for Ukrainian free economic zones. During its implementation, new courses were introduced for students, taught by both their own and European teachers. A

significant amount of methodological material was prepared in English, the use of which requires a good knowledge of it.

Two projects of the International Visegrad Fund are also aimed at the student audience and provide for the teaching of a set of new elective courses by scientists from Slovakia, Poland, the Czech Republic, Hungary and other countries :

- Political and economic aspects of biodiversity conservation in the Visegrad Group countries (2016 - 2019);
- Green and blue infrastructure in the cities of the former Soviet Union - studying the heritage and experience of the Visegrad Four (2020 - 2022).

In addition, European scientists regularly teach in English at the Institute of Ecology under the Erasmus + Jean Monnet Module "EU Environmental Policy Instruments - INENCY".

In addition to new competencies, deep knowledge and skills, participation in projects gives students the opportunity to join European educational practices, to assess their own level of professional training for possible employment.

A separate area of mutually beneficial formation of language and professional educational competencies is the implementation of individual educational trajectories through academic mobility. The Institute of Ecology is currently implementing two grants aimed at the possibility of internships for students and graduate students:

- Academic Mobility Project with the Athens University of Applied Sciences (Greece), 2019-2020. Under this project, students travel to Greece for one semester and study with Athenian students directly in classrooms. Invaluable professional experience in such conditions can not be gained without a good command of English.

- Erasmus + Project "Comprehensive doctoral program in environmental policy, environmental management and technology - INTENSE". It is during academic mobility that students and graduate students face the need to use English not only in class but also in everyday life. In these conditions, a high level of language training is unalterable, and the example of students and graduate students who have used their opportunity for academic mobility is an additional argument for motivation. International Summer Schools were held under this project in Hungary, Estonia, Belarus, Mongolia and Ukraine. In addition to lectures by European lecturers, the multinational student audience worked on joint research projects. This increased the level of both professional and general competencies, which include language.

Another component of the joint formation of language and professional competencies are international scientific conferences and English-language scientific publications, without which it is impossible to declare the results of their research and assess the level of their compliance with the current scientific level in their field. It is to ensure the possibility of presenting one's own scientific work that the following disciplines have been introduced: "Foreign language for scientists" (Bachelor's degree), "Business foreign language" (Master's degree) and "Foreign language for graduate students" (PhD). As a result, the English-language publishing activity of students has increased at the Institute of Ecology.

The choice of ways to improve the quality of foreign language learning depends on the conditions under which the educational process takes place, the level of activity of HEE students, inclusion of students in research activities, and so on. Performance affects not only the success of students and graduate students. By participating in various international events (grants, mobility, conferences, seminars, congresses, etc.), they significantly expand their worldview, increase self-esteem and expand their "horizons". Fig. 2 shows the generalized scheme of the components forming language and professional competences. It

reflects only some of the components of mutual benefit of language and professional competencies joint formation.

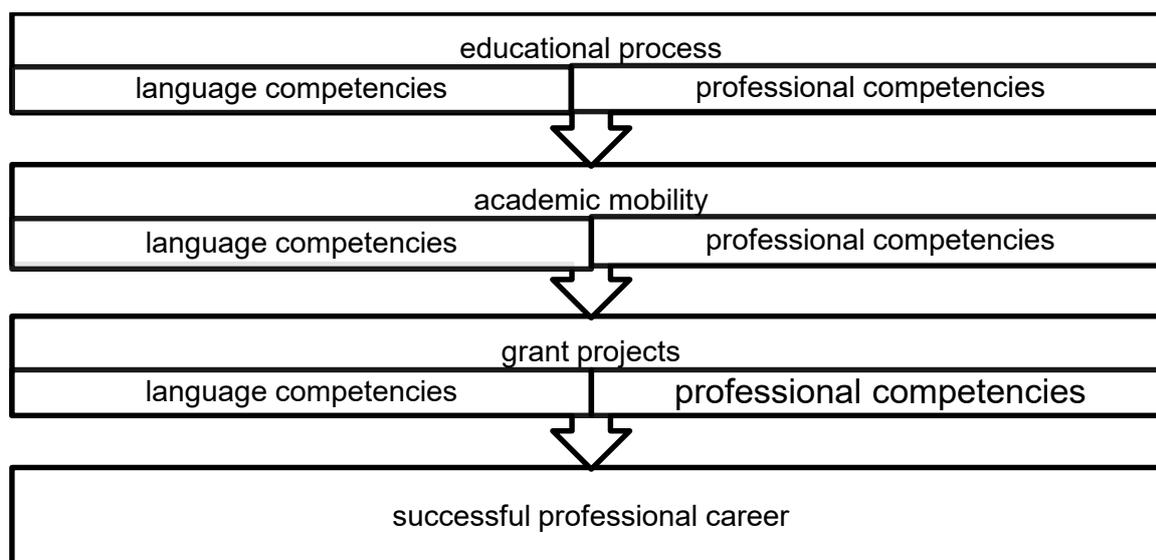


Fig. 2. Origins and consequences of mutual complementarity of language and professional competencies.

Thus, the implementation of the thesis stated in the EP on improving language training of future professionals is possible not only in specialized classes in the discipline of "Foreign language", but also in extracurricular activities. At the same time, the success of their implementation depends on the established language competencies. This dialectical interdependence allows you to train a highly qualified specialist.

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## **DEVELOPMENT OF SOFT AND HARD SKILLS FOR PHD STUDENTS OF MEDICAL UNIVERSITY AS A TOOL FOR THE FORMATION OF HIGHLY QUALIFIED SCIENTIFIC AND PEDAGOGICAL STAFF**

The quality of PhD training of students in universities has been and remains an urgent problem of medical education. In future, after the defense of their dissertations, this category of people will join the ranks of scientific and pedagogical staff of the university. They will take an active part in training of a doctor at all stages (undergraduate and postgraduate) of their formation as specialists.

Modern scientific and pedagogical workers, according to the approved professional standard for the group of professions "Teachers of higher education", must perform their job functions, which are a synthesis of hard skills and soft skills, at the appropriate level [1].

Hard skills are understood as professional skills, abilities and knowledge that are necessary to perform professional tasks. Hard skills directly depend on the acquired level of knowledge and skills during the study of fundamental and special disciplines at the medical university [2]. Soft skills are a set of communicative, leadership, team, public, personal and other non-specialized skills and abilities important for career growth [2]. Hard skills are known to be documented (with a higher education diploma), while soft skills are an integral quality of a personality that can only be tested in the course of one's professional duties.

The educational process in PhD students, from our point of view, should be aimed at developing their hard skills and soft skills. Most scholars agree with us, noting that soft skills should complement hard skills. Although some scientists emphasize that in the educational process more attention should be paid to soft skills because they provide 70-85% of career success, while hard skills - 15-30%.

A modern scientific and pedagogical worker of a medical university must be a highly qualified specialist, a well-developed personality, generate and implement ideas that change the world [3]. Therefore, it is extremely necessary to develop and improve the hard skills and soft skills acquired by him during his studies at the medical university throughout his life through various internships, trainings, courses, etc.

The challenges of the 21<sup>st</sup> century can be the impetus and reason that a person will be forced to change one profession, and possibly several professions in a lifetime. And in

this case, they must have, from our point of view, first of all, well-developed soft skills. Thus, the global pandemic COVID-19 radically changed both the content and forms of the educational process in the medical university, to which the scientific and pedagogical staff of the educational institution had to adapt quickly [4].

Given the importance of soft skills for a successful career growth, in May-June 2021 Kharkiv National Medical University held an online Leadership School for PhD students for the first time. 27 PhD students became students of the school. The speakers of this event were international and domestic experts. The international partner of the School of Leadership for PhD students was the International association "InterRegioNovation" (Paris, France); a memorandum of cooperation was signed with it. Considering the growing interest among PhD students in the PhD Student Leadership School, this event is planned to be held annually.

Thus, the educational process among PhD students at the medical university who will join the ranks of scientific and pedagogical staff of this institution in future, should be aimed not only at the development of hard skills, but also soft skills. The development of these integrated skills will allow a person to become a highly qualified specialist who meets the requirements of today and is able to adapt to the challenges of the XXI century. Conducting a School of Leadership for PhD students at the medical university, involving foreign and domestic speakers, is a good foundation for soft skills formation in this category of people.

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## **PROJECT: FROM IDEA IN HEAD TO REPORTING**

People are constantly implementing some projects in everyday life: preparing for the anniversary celebration, repairing an apartment, writing a book or painting a picture. This list can go on indefinitely. It does not always consciously distinguish out the activities as a project.

We can say that a project is a clear and detailed planned solution to any identified problem.

Each project must have its budget, staff (project team), relevant material resources, as well as related activities for its implementation. In general, a significant number of people (both interested and not so interested), as well as external organizations or enterprises are involved in the project implementation process. This leads to a complex process of project management.

Based on the above factors, it seems that writing projects require certain skills, knowledge, experience.

If we choose the field of education for the project, an example could be: creating a course or a program, conducting joint research, or something larger, which can involve up to 10 institutions from different fields, such as governments, businesses, educational institutions, etc.

In order to clearly understand what factors will affect the implementation of the project, it is necessary to remember three basic criteria for the logic of the project:

- Time, which is always limited in the project.
- Scope is the tasks and activities of the project, it's content.
- Cost. This includes all resources of the project (including human resources) because they have a monetary value.
- There is also the fourth - quality. It is not always mentioned in the projects, and it does not always describe the quality requirements. However, as a result, all evaluate any project including its quality.?

If we change one of the above - mentioned criteria, one or all criteria can vary. For example, if the project time is reduced (to be finished in two months or a month earlier), it may lead to a change in the project's content, reducing the number of activities.

On the contrary, if we want to increase the number of activities, we must increase the budget or add time, sacrificing quality, or all taken together [1, 2].

The project is a set of measures that has not been implemented in this configuration yet. Although a lot of activities may be implemented separately.

Each project has its inherent characteristics, distinguishing it from other activities [3]:

- Goal-oriented;

It is necessary to plan actions and activities within the project activities to achieve the goal, which focuses on its implementation.

- Defined duration;

Each project is planned within a defined time frame. The project can last for a month or five years, depending on its scale. The planning goal must be achieved within the allotted time. The project cannot function after the planned date of completion. The project time is controlled strictly by the grantors.

- Uniqueness;

- High degree of complexity.

In general, these characteristics distinguish the project from other activities.

You have to have an idea to implement a project, but first, you need to find a problem to be solved. It is necessary to analyze all factors of the problem, what impact they have, determine the main goal from which the tasks will follow, and later the project's results.

It is necessary to follow questions to be answered at the idea stage for a project to be successful: What caused the problem? What will be the consequences? Is the project relevant? Is the right time chosen for its implementation? How will the project differ from other projects? Who is the target audience or beneficiaries of the project?

The project goal is the highest point of achievement, which the organization wants to reach through it [4]. The purpose of the project should be clear, concise and reflect the final result. Project objectives should follow from the goal and agree with the planned activities. They can be seen and measured. These are always expected quantitative and qualitative results from the project.

An indicator of the project's quality is the correctness of the planning and timing of activities and other actions.

A project manager is a multifunctional person endowed with a wide range of competencies [3]. The main functions of the project manager correlate with all the processes that take place in the project:

- communication with all links of the project (the team);
- project content management;
- making necessary changes in the project activities, adjusting tasks;
- monitoring compliance with deadlines;
- tracking and adjusting the overall project schedule;
- budgeting and financial resources to the project;
- identifying risks and their prevention, etc.

Thus, leadership qualities, a wide range of competencies, self-confidence, analytical skills, self-organization, desire to get to work are the key characteristics of a project manager.

A chance of success is when when the project is logical, the goal corresponds to the project, the means of implementation correspond to the task, management is simple and effective, the budget is realizable, risks are calculated.

A donor is a state, the government of a foreign state, the organization, institution, foundation authorized by the government of a foreign state providing international technical assistance [5].

Grant is funds transferred free of charge by the donor (sponsor, grantor) to the grant seeker (applicant) to do fixed work [6].

Grants are funds that patrons or governments of developed states give to special foundations (donor organizations). The organizations, for their part, distribute the funds according to the customer's priorities.

Generally, money is given to organizations to solve acute social problems in less developed countries or their state as well as for economic support of worthy projects.

After you developed an idea and the stages of its implementation, the project manager must write a proper project application for a grant to implement it

A successful application means that there will be an opportunity to realize professional ideas and dreams.

You will need partners for most project applications. Therefore, you need to increase the quantity and quality of your organization's external relationships at all times.

A project proposal is not just a collection of all your brilliant ideas. If it does include collaborative elements, it should be the result of joint work and comprehensive analysis of the situation/external factors and the priorities of all countries/organizations involved. Therefore, the project you will work on will be more comprehensively innovative and tailored to the needs of your recipient [7].

Each fund has its requirements for project documents, but there are general criteria/requirements that grantees put forward.

Firstly, you should not write the project quickly and in one day, leaving the application for the last day. It should be checked for errors, logic, correct interpretations of all stages of work, more than once, not even twice.

The description should include the required information about the content and topic of the project, the funding organization, the project's team (full name, subordination), sometimes the project manager (position, degree), the exact legal address, telephone, email address. If the project does not meet the requirements, it has no chance of winning the grant. The budget requires clear elaboration, writing, transparency. The donors, first of all, pay attention to the total cost of the project, the number of funds requested, the contribution of the organization itself to the implementation of the project, etc., through thoroughly considering an application.

As a rule, the project budget consists of:

1. Fees and wages
2. Major expenditures
  - 2.1. Equipment
  - 2.2. Material support
  - 2.3. Travel and transportation expense
  - 2.4. Other expenses
3. Indirect costs

Any budget must be supported by the purposes and tasks and the offered methodology. The project budget should automatically follow what plan to implement. It is not written under the grant budget. It is necessary to find a balance between the practical financial needs of the project and the donor's capabilities and desires.

The risks are always present in the project. You should be able to foresee them.

Not always everything goes well according to the schedule or plan in a project. The project will be influenced by external factors. You have to assume conditions that are not subject to control (risks). And ensuring the correctness of these assumptions is one of the most complicated aspects of project development. The full-fledged application should reflect a thorough study of this issue. One of the functions of project developers is to identify such external factors and, if possible, to take into account mechanisms in its implementation plan

that will allow either to work with these factors or to monitor their influence. Some will be critical to the success of the project, while others will be negligible. The effectiveness of the project is always measured by the quality and the achievable planned results.

A good project is efficacious when it eliminates the problems from the start.

No grantor will finance the same project permanently. The organization that decides to support the project must have guarantees, that the activities launched early - will continue after its completion. Donors usually want to know how the project will be funded after the grant period expires. It is necessary to show the project continuity, a plan that would convince the donor that the organization has enough funds (or will receive) to continue the project implementation objectives.

Reporting within the project can be regular or final (meaning). It is always necessary to know the reporting form requirements since the report should reflect the level of project implementation.

Otherwise, give reasons for non-compliance. However, incorrect or undue reporting can have consequences in the form of fines.

First of all, you should be aware of the priorities and activities of the funds you apply for. Within these areas, certain programs operate annually, which narrow and specify the range of currently possible objects of funding. Such annual programs should be specifically reported from the press or directly from the managers and program directors of these funds. The list of funds, indicating the specific direction of their activities with addresses and contact numbers - this is what you need to start, after carefully preparing your project.

Otherwise, give the reasons for the failure. First of all, you should clearly understand the priorities and activities of the funds you apply for.

There are annual programs in different areas that narrow and specify the range of possible financing facilities at the moment. You can learn about these annual programmes from the press or directly from managers and programme directors of these funds. The list of funds, indicating the specific focus of their activities by addresses and contact phones, is what you need to start with after carefully preparing your project.

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## **SOME MOTIVATIONAL TOOLS FOR SUCCESSFUL RESEARCH ACTIVITIES OF A GRADUATE STUDENT: HOW NOT TO LOSE THE HEART**

Without a doubt, development and improvement of soft skills, such as analytical thinking, creativity, communication skills, leadership skills, public speaking, high performance, psychological stability and some other skills are of great importance in successful research activities [1]. Methods for the development and improvement of these qualities are described by specialists in the field of human psychology, and many scientific works have been devoted to the phenomenon of "scientist's thinking" since ancient times [2-4].

In our opinion, the main motivational tool of a graduate student, the driving force behind his professional activities, is unshakable confidence in the high significance of his own research for the world scientific community! However, not every graduate student can boast of all the professional skills required to be engaged in scientific research. Not everyone dreamed of a career in science from a young age, accordingly, insufficient attention was paid to the development and improvement of relevant skills. It is possible that the research topic bores a young scientist, seems incredibly difficult, and there is no way to change the direction of his scientific investigation. How to act in this case?

Discuss the topic of your scientific work with friends and acquaintances in a positive way; present the subject of your research as extremely deserving of attention; describe the measurement procedure in an entertaining manner. If you are tormented by some troubling doubts about your own ability to make a breakthrough in science, convince yourself that the results of your work can at least be highly appreciated in certain professional circles.

Methodically track scientific publications on your topic; critically analyze the results obtained. Turn the process of working with scientific sources into a fascinating investigation in which you play the role of a detective. Look for questionable points (gaps) in the description of the methods used. Identification of deficiencies in existing methods may prompt you to create your own method or improve an existing one. Look closely at the statistical methods used to process the data. Feel like a hunter following the trail. Let Honore de Balzac's statement "The question mark is the key to all science" be your motto [5]. A nice bonus of a literature review conducted in this way will be a solid references page in your thesis.

Next pillar of successful dissertation research is the ownership of statistical apparatus at the appropriate level. It is difficult to overestimate the importance of statistics for science. Consider carefully which statistical methods you can use to process various data. Explore the possibilities of different methods and especially the limitations (!) of their use. The importance of statistics in science cannot be overemphasized. From personal experience, we would like to say that it is much easier and more interesting to master the statistical analysis of data, using the already existing results of your own measurements as a database.

Another lifehack - look for examples from relevant sources of how to solve statistical problems, repeat the course of the statistical problem, check your result with the answer.

Feel the delight and pride that you managed to solve the problem correctly! Analyze the reasons for your mistakes that might have occurred. With each subsequent correct solution of statistical problems, your self-confidence will grow.

Before starting a large-scale series of measurements, make sure that the tools at your disposal are fully appropriate to the purposes of scientific investigation assigned, and you have mastered the necessary techniques and the probability of measurement error has been reduced to a minimum.

To sum up, it can be said that carrying out one's own scientific research is a very labour-intensive process involving not only the acquisition of the necessary professional skills, but also the development of personal qualities such as purposefulness, stress tolerance and positivism.

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## **EFFECTIVE TECHNIQUES IN DEVELOPING A MORPHOMETRIC PROTOCOL FOR HUMAN ANATOMY RESEARCH**

Development of an appropriate methodological support for dissertation research is of great importance [1-3]. In the case of morphometrics, such as the study of certain parameters of the human skull, a graduate student needs a protocol for recording morphometric measurement. The quality of the morphometric investigation protocol largely determines the viability of the research and the possibility of establishing scientific novelty. Hence, the development of a high-quality morphometric protocol, a task that will require a graduate student to have qualities such as original thought, planning, foresight, the time management skills and some others. Therefore, the process of creating a morphometric protocol deserves special attention.

Before proceeding to the development of the morphometric protocol, formulate a series of hypothesis that you can later confirm or disprove in the course of the study. Use your hypotheses to plan your measurements. In developing the protocol of morphometric studies, it is necessary to bear in mind individual anatomical variability, especially with regard to the anatomical landmarks you have chosen.

On the one hand, your morphometric protocol must be strictly relevant to the goal and purposes of the study and represent a sequential step algorithm to help you in a minimum time to make the maximum number of measurements. On the other hand, it should be simple and understandable not only to yourself, but to the likely associates of yours who will make the measurements. The desire to create a perfect morphometric protocol can cause anxiety among the graduate students perfectionists and long-term delay the immediate beginning of measurement. What can be done in this case?

Accept the possibility that in the process of morphometry you will encounter difficulties you cannot foresee. It is possible that in the middle of the way you will encounter objects with unusual properties not previously observed by you, which do not lend themselves to a full description of the protocol you already have and represent a clear confirmation of the theory of anatomical variability [4-6]. In that case, you have to make changes to your protocol of morphometric investigation, or perhaps more than once; go back to the objects already measured and study them again, but from a different perspective. These actions, in turn, lengthen the duration of this step of scientific research process and may shake your faith in yourself. How can such a situation be prevented?

Based on our own experience, during the planning phase of morphometry, we recommend to get acquainted with all the anatomical collections available at this time that you will have to work with during your research. If you study skulls, first perform a cranioscopic survey of all the existing objects, select among them those that have an extreme degree of development of the features you are studying or unusual manifestation thereof. Write down ideas, thoughts, doubts that arise in you. Then analyze the obtained material and develop a protocol of morphometric examination, while simultaneously testing it on the anatomical material at your disposal at that time.

In our view, this approach to the development of a morphometric protocol has great potential to increase the effectiveness of morphometry in cases where there is gradual (not instantaneous) involvement in a large number of anatomical objects.

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## **SKILLS POSSESSED BY YOUNG SCIENTISTS DURING EXPERIMENTS WITH THE PARTICIPATION OF LABORATORY ANIMALS**

Experiments and discoveries are one of the parts of a researcher who can currently write a dissertation. The task of young scientists in writing a work is to develop sets of experimental and mental skills that will allow them to make discoveries, including how to recognize and use chance when it is impressive.

When introduced into everyday use, dental materials that have constant contact with the oral cavity must be stable and passive, without interaction with the environment. Dental materials, namely glass ionomer cements for permanent fixation, usually have these characteristics and are widely used in various fields of dentistry [1, 2].

Given all the above, we proposed a new glass ionomer material for permanent fixation of fixed dental structures [3].

To prove the safety of the glass ionomer cement we developed, we conducted an experimental study involving laboratory animals. The literature suggests that researchers need effective communication and interpersonal skills, which are key clinical skills. These basic skills are related to meeting the needs of researchers [4, 5]. The importance given to clinical communication skills when working with laboratory animals is not currently reflected in educational opportunities. Practical teaching of communication skills in a practical environment is an integral part of the skills transfer from the university environment of competence in practice.

The purpose of our investigation was to determine the communicative and soft skills of young scientists when conducting experiments using laboratory animals.

**Materials and methods.** The experiment was carried out on groups of laboratory rats with a detailed study of the injected material, hematological, biochemical parameters of blood, behavioral reactions of animals and their kidney function. The animals were kept and experiments were carried out in accordance with the "European Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes" (Strasbourg, 1986), Law of Ukraine No. 3447-IV of February 21, 2006 "On the Protection of Animals from Cruel treatment". Observations of the state and behavior of animals have shown that they satisfactorily tolerate daily contact with glass ionomer cement for one month.

The results of the investigation. Scientists should be interested in their scientific world, they want to know what happens and how everything works. Scientists need to be patient, as they sometimes repeat experiments several times to test the results.

Scientists know that responses are based on observations and data collected. Close attention to detail is important in the development of scientific theories. Detailed observations in one experiment can also lead to answers in another. Persistence in the work of scientists indicates decades of work, and that their approach may be wrong, and future scientists may prove that they are wrong. Scientists need good communication skills, because teamwork is the key to a successful experiment, after receiving the results the ability to share information with the public or collaborate with colleagues around the world.

Critical thinking and the ability to solve problems makes it possible to analyze information and make critical decisions to solve experimental problems or global problems.

### **Conclusions**

Although not every scientist has all these characteristics, it is these traits that make good scientists.

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## **THE PROBLEM OF FUNDRAISING IN IMPROVING THE DIAGNOSIS OF MYOCARDIAL IMPAIRMENT IN POLYTRAUMA WITH CONCOMITANT CARDIOLOGICAL PATHOLOGY**

In economically developed countries, young scientists can get funds, especially when it comes to research work. First of all, we look for funding of modern reliable reagents sets for the determination and differential diagnosis of pathological conditions in the dissertation work.

In the course of the research work, there is always a problem of acquisition of reagents. Young scientists often face a dilemma regarding qualitative examination and treatment of patients within the scientific work and with certain costs that are always present and everyone will have to meet. State medical institutions, where we examine patients within the dissertation work, cannot always cover the costs for diagnosis and improved treatment. Therefore, do not underestimate the help of funding from the university. In my work, I had to determine an indicator such as brain sodium propeptide (BNP-fragment). The importance of determining its deviation in patients of the polytrauma department with cardiological concomitant pathology will contribute to the optimization of diagnosis and improvement of treatment, which is a significant link in medicine.

As part of my full-time postgraduate studies, I was provided with financial assistance in purchasing one set (96 samples) to determine brain sodium propeptide (BNP-fragment) from Kharkiv National Medical University. Its cost amounted to 22466.00 UAH. After that, 32 patients with polytrauma without myocardial damage were studied. The absence of myocardial lesions was proved by the level of troponin (TnI), not exceeding 0.3 ng/ml. Patients were divided into two groups (group 1 (n=15) with chronic heart failure (CHF), group 2 included patients without CHF). The absence of BNP was proved by a level of brain sodium propeptid (BNP - fragment) not exceeding 90 pg/ml; its presence has been reported with a level exceeding 100 pg/ml. Hemodynamic indicators were the basis for determining the energy rate of blood flow in tissues. The circulation reserve (CR) was the integral energy index. All measuring was taken at the time of admission of patients to the hospital, and on the 3rd and 7th day after admission.

Thus, the results of the BNP-fragment study showed an obvious clear difference between the 1st group of patients with concomitant pathology such as CHF and group 2 without concomitant cardiology pathology. During the admission to the hospital of CR in groups of patients was low and did not show significant difference (in the 1st group -  $117 \pm 44$ , in the 2nd group -  $99 \pm 39$  mW/m<sup>2</sup>,  $p=0.2$ ). In the course of eliminating hypovolemia and restoring oxygen ability of the blood, the CR increases in the 1st group faster than in the 2nd; on the 7th day, it reached  $414 \pm 128$  mW/m<sup>2</sup> which increased to dangerous values, while the 2nd group showed the result only to  $295 \pm 96$  mW/m<sup>2</sup> ( $p=0.005$ ), which is lower than the reference values. One patient from the 1st group died; two in the 2nd group died; their tolerance ranges were from 26 to 121 mW/m<sup>2</sup>.

**Conclusions.** The fundraising plays a significant role in every scientific work, which leads to a decrease in the level of mortality and disability of patients. The determination of

cerebral sodium propeptid (BNP-fragment) plays a leading role in the diagnosis of impaired cardiac function. CHF makes the course of acute hypovolemic insufficiency associated with polytrauma, not associated with myocardial injury, more severe. A more severe course of polytrauma in patients with the initial CHF prerequisite is a violation of the energy reserves of the myocardium. That is, its inability to quickly transfer the chemical energy of the oxidative substrates to the mechanical energy of contraction. Treatment of patients with polytrauma in chronic heart failure requires improved myocardial metabolism. An important prognosis of the severity criterion for the course of accumulating hypovolemic insufficiency may be the level of circulatory reserve; its value below 100-120 mW/m<sup>2</sup> is the worst prognosis of the result.

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## **SCIENTIFIC TALK: ANALYSIS OF FEATURES AND MISTAKES**

Public speaking is an important part of research activities. It allows presenting the research results to the audience, including colleagues, academic administrators, laypersons, and grant organizations. In addition, public speaking skills are indispensable for those who want to get a doctorate degree. Scientific talk requires mastering a number of skills and has its own features.

The aim of this mini-review was to identify the basic psychological, linguistic and organizational characteristics of research public talks.

**Materials and methods.** Papers, video courses on public speaking and theses were analyzed in order to provide recommendations concerning the psychological, emotional and semantic components of public speaking for researchers.

**Results.** To prepare a research presentation, it is primarily desirable to define the purpose of the report and those benefits that the speaker expects to receive. An important aspect is to assess the interests and level of knowledge of the audience and the capabilities of the speaker. To overcome psychological barriers, it is necessary to take into account the phobias, risks and carefully prepare the data with several speaking trainings. Research talk consists of an introduction indicating the relevance, goals, objectives, research methods, results, and conclusions. The presentation should have 10-15 slides. It is advisable to present no more than 2-3 key ideas in the report that lasts for 10-15 minutes, dividing the speech into semantic blocks of 2-3 minutes each. More information can not be grasped efficiently by the audience. The presence of questions, including those that are prepared in advance, indicates the audience's interest. The most frequently observed mistakes are incorrect assessment of the audience needs, the goals of the report, and excessive information without highlighting the main ideas.

**Conclusions.** Scientific talk is an important final stage of any PhD research, which allows presenting the findings and requires the thorough preparation.

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## **THE SCIENCE IN MODERN SOCIETY: OPPORTUNITIES FOR MEDICAL POSTGRADUATE STUDENTS**

**Introduction.** The development of modern society can hardly be imagined without advanced technologies in all areas of human life. A comprehensive understanding of modern science as a type of human activity is required for successful medical education. It is important to understand what is the science, its history, methods, the role of scientific community, and criteria used to assess the quality of researches.

**The aim** of this mini-review was to define the basic elements necessary for post-graduate students to understand the features of modern science.

**Materials and methods.** Papers, video courses on public speaking, theses and databases were analyzed to find the basic elements required for post-graduate students to understand the features of modern science.

**Results.** The science is a field of human activity, aimed at developing and systematizing objective knowledge about reality. In the classification of sciences, it is important to distinguish between basic and applied sciences. It should be mentioned that life, humanitarian and technical sciences differ in research methods and tasks. We should distinguish historically periods of knowledge accumulation, the development of experimental approach and the age of professional science. Trends in science, scientific mobility, the age of researchers, the use of different languages and the distribution of researchers by country are worth paying attention to. The scientific community functions on the basis of public and private universities, academies of sciences. Scientific social networks and electronic databases serve as a unifying factor that makes it possible to provide interaction between researchers. The activity rating of researchers and scientific institutions is based on the publications and scientometric indicators that depend on the number and quality of research publications. **Conclusions.** To achieve career success, post-graduate students should master the complex of modern research approaches and publish their findings in high-quality journals to improve their scientometric indicators.

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## **NON-ALCOHOLIC FATTY DISEASE AND HYPERTENSION: VIRTUAL PRESENTATIONS OF COMORBID PATHOLOGY**

Patients with comorbidities of noncommunicable diseases (NCDs) are a priority for healthcare systems worldwide [1]. For example, nonalcoholic fatty liver disease (NAFLD) is becoming an increasingly common cause of chronic liver disease worldwide, and growing evidence suggests that NAFLD is associated with other systemic diseases, including hypertension (HT) [2]. Likewise, other noncommunicable diseases pose serious public health threats, both individually and in combination. Therefore, it is important not only to study such cases, but also to constantly present the results of work at thematic conferences, congresses, symposia and other scientific events. In the public domain, there are many recommendations for preparing presentations, in particular, regarding medical issues [3-6]. Moreover, new guidelines for virtual scientific presentations have appeared recently [7]. But there is still not enough information on how to prepare reports on the topic of comorbid pathology. We have often presented studies related to the study of NAFLD and HT at international scientific events, and in the conditions of quarantine restrictions, we had to gain experience of virtual performances. This allows us to reason about the presentation of comorbid pathology in a remote format based on personal experience.

The aim of the study is to determine the features of the remote presentation about patients with a combination of NAFLD and HT or other comorbid pathology cases.

**Materials and methods.** We have studied recommendations on the preparation of presentations on medical topics at scientific events in both traditional and virtual formats. We also compared the obtained data with personal experience of oral presentations about patients with comorbidity of NAFLD and HT.

**Results.** The purpose of oral presentation is to make large volumes of complex information more understandable [4]. Therefore, it is important to take a responsible approach to the preparation of presentations, especially when their topic concerns such a complex issue as comorbid pathologies. Even more problems arise when a presentation is planned in a virtual format, when the speaker is often forced to be in inappropriate conditions and physically cannot see his audience.

Research published in the Harvard Business Review shows that people are often engaged in different activities during a conference call, simultaneously. About 65% of them

declared doing other work, 63% of conference participants usually send emails and messages, and at least 55% participants eat during important online events. Also, 27% of those surveyed say they fall asleep when making calls without video communication [8]. Probably, the behavior of viewers at online conferences and congresses does not differ from the respondents in this study, especially if the number of participants in the event is large enough. Therefore, it is important to make every effort to attract and retain the attention of online audience at virtual science events.

According to research, most often (in 62.9% of cases) different guidelines recommend authors to make slides simple. In particular, tips include reducing the number of rows on a slide (42.9%), the number of words per line (28.6%), and the use of tables and graphs (34.1%) [5].

An important role in the success of the entire presentation is assigned to the title - it is believed that it should be clear and reflect the essence of the report [3]. The presentation should start with a slide containing the title of the study, the name and affiliation of the authors. It is recommended to start the report by addressing and thanking the audience and the host organization [4]. The guidelines indicate that the beginning, middle and end of the presentation should be connected logically [3].

The slides in PowerPoint or another program should contain a minimum of information for a better perception of the information by the audience. Graphs help to visualize complex information, but it is important to explain them clearly during the presentation [4]. The optimal font size for slides is from 26 to 30 [3, 5]. The number of slides for a report depends on the length of the presentation, but should not exceed 40 [3]. Most often it is recommended to calculate their number according to the formula: 1 slide = 1-2 minute of speech [5, 6].

Also, the recommendations indicate the importance of adhering to the rules of the performance, which will exclude the risk of being interrupted by the organizers. Therefore, authors should keep in mind the permitted length of the presentation when preparing and rehearse their speech in advance [3, 4].

Regarding the emotional state of the speakers, research shows that careful preparation and thoughtfulness can help to cope with anxiety, while the experience of public presentations allows speakers to develop self-confidence [3]. When performing offline, it is important to maintain eye contact with the audience and remember to smile and pause after each important comment. The authors should speak slowly and concisely to highlight the key points of the presentation [4]. Also, authors are encouraged to check in advance correct display of the presentation on the organizers equipment [6].

In general, the recommendations for preparing virtual presentations are similar, except for a few tips on how to make the presentation more accessible to online audiences and increase their engagement [7].

Based on our personal experience of presenting works about patients with a combination of NAFLD and hypertension, we have defined the rules for comorbidity diseases presentation in a remote format:

- both diseases should be indicated in the title of the report in order to immediately draw the attention of participants to the problem of comorbid pathology;
- it is important to indicate the practical significance of both nosologies in order to emphasize the problems of combining two serious problems;
- the purpose of the study should also contain information about the comorbidity of the two diseases;
- if possible, it is better to accompany information that is difficult for perception with graphic images;
- in the case of comorbidity of NAFLD and HT, as well as other pathologies, graphs of relationships can help explain complex ideas in a simple way;
- it is important to separate diseases by color - separate colors should be selected to graphically represent data for patients with each pathology separately and cases with their comorbidity;
- in the conclusions, it is imperative to indicate statements taking into account each of the diseases and remind the audience that the research topic was associated with the comorbid course of two serious diseases;
- before starting the presentation, it is important to check the correct working of all the necessary applications, microphone and webcam, access to the selected online platform;
- after the announcement of a member of the organizing committee, the presenter should introduce himself, express gratitude for the opportunity to take part, if necessary, ask about the quality of sound and image;
- it is important for the author to imagine himself at a real event and behave in accordance with the rules of conferences and congresses during a report – this will allow him not to get confused due to the lack of physical viewers at a virtual event;
- an interesting statement of material and thematic pictures with social implication will help keep the audience attention;
- with the last slide, the presenter should thank everyone for their attention, and it's important to indicate contact information in case someone wants to ask questions about the report personally.

### **Conclusions**

Thus, textual, graphic and sound data representation affects the perception of information by the audience and determines the oral presentation success. It is important to pay sufficient attention to preparing a presentation on comorbid pathology, for example, NAFLD and HT or other significant combinations of diseases. General guidelines can help authors prepare a high-quality presentation, but only the experience of active participation helps speakers feel confident, particularly in challenging environments such as virtual science events.

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## **LIFE QUALITY OF PATIENTS WITH THYROTOXICOSIS**

Quality of life is an integral indicator that reflects how satisfied a person is with their physical, mental and social condition. It is a person's subjective perception of various aspects of their existence, this indicator characterizes a person's emotional state at the time of the survey. WHO defines Quality of Life as an individual's perception of their position in life in the context of culture and value systems in which they live as well as in relation to their own goals, expectations, standards and concerns [1].

The aim was to investigate the life quality of patients with thyrotoxicosis.

Methods. Current study included 65 patients with thyrotoxicosis (high free T3 and free T4, suppressed TSH) and 38 euthyroid patients (normal free T3, free T4 and TSH) of the control group. The age of patients ranged from 18 to 55 years old.

Quality of life was assessed according to the questionnaire developed by Mezzich, Cohen, Ruiperez, Liu & Yoon (1999). This questionnaire encompasses Physical well-being, Psychological/Emotional well-being, Self-care and Independent Functioning, Occupational Functioning, Interpersonal Functioning, Social Emotional Support, Community and Services Support, Personal Fulfillment, Spiritual Fulfillment, Overall Quality of Life [2].

Results. A significant difference in the quality of life of patients in the main and control groups was determined.

Patients with thyrotoxicosis showed a lower level of satisfaction with all the quality of life criteria compared to healthy people. Thyrotoxicosis affects most negatively psychological and emotional well-being ( $5.6 \pm 1.6$  against  $7.1 \pm 2.3$  in control group). There was also a lower level of satisfaction with physical health ( $6.8 \pm 1.8$ ), patients are not completely satisfied with interpersonal interaction ( $7.3 \pm 1.1$ ), socio-emotional support ( $7.5 \pm 1.1$ ), community and services support ( $7.1 \pm 1.1$ ), personal realization ( $6.8 \pm 1.6$ ) and spiritual realization ( $5.9 \pm 1.5$ ).

The average of the overall perception of life (sense of satisfaction and happiness in general) in the main group was  $7.1 \pm 1.4$ , in the control group  $7.8 \pm 1.8$ .

Conclusions. Patients suffering from mental disorders during thyrotoxicosis require an interdisciplinary approach combining the psychopharmacological component and psychotherapeutic support in order to develop an efficient concept of early diagnosis and appropriate correction.

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## **PECULIARITY OF THE PEDIATRICIAN'S WORK IN CHILDREN WITH ASTHMA**

Asthma is a chronic inflammatory disease of the respiratory tract [1, 2] and one of the most common chronic pathologies in children and young adults [3].

The WHO estimates that about 300 million people suffer from asthma. Asthma incidence rates range from 1-18%. In children, this figure ranges from 5 to 10% [4, 5].

Medical and social significance of asthma is growing every year. That is why we are forced to look for new ways to treat such patients.

Peculiarity of the treatment and examination of children with asthma is the close interaction not only with the sick child, but also with his parents and close relatives. It is very important to use an individual approach to treatment and to communication with family and child.

In my opinion, it is very important to be familiar with the disease. Very often unsuccessful treatment of asthma is associated with the patient's misunderstanding of his condition, and further incorrect compliance or disregard for the doctor's recommendations. Understanding the adversary is a big step towards success. A coalition between a skilled doctor and a patient who knows the specifics of his disease and can control his condition will lead to unity of action and help to avoid complications. That is why the education of asthmatic patients and their parents is a priority condition for success.

There are a number of studies on the awareness of patients and their parents about the substance of this pathology [6, 7]. But the results are not comforting. Asthmatic patients and their parents have no idea about the disease, they do not know how to use essential devices (metered-dose inhalers, holding chambers, peak flow meters, nebulizers), have a negative attitude to the use of continuous basic (corticosteroid) therapy.

The reasons for this are: low level of social development, the information comes from the doctor in an inaccessible form, difficult psychological state of the chronic patient, and others.

Children with asthma and their parents are also constantly under stress [7-9]. Depression is caused not only by the disease itself, but also by the obligations that come with it. This is a constant control of your disease, compliance with the regime and diet, daily treatment and regular medical supervision. For many families, treating childhood asthma is becoming a difficult challenge. The first acquaintance with asthma causes feelings of insecurity and helplessness. In the future, unpredictable and sometimes life-threatening symptoms can become a heavy psychological burden for parents.

This is the responsibility of the medical staff for the little patient and for the family as a whole. Finding a common language is extremely difficult, but very necessary. That is why

a pediatrician must combine a large number of qualities: professionalism, humanism, humanity, compassion, tolerance, honesty, adherence to ethics and morality.

Asthma schools, pulmo- and asthma clubs, asthma classrooms and other things also come to the aid of the medical community and families. They help to overcome common problems, raise awareness, reduce anxiety, and most importantly, that all participants are under close medical supervision and can count on timely assistance.

It is important to remember that asthma treatment is more effective when parents and their children receive information about disease management and have access to high-quality medical services.

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## **GAMIFICATION AS A TECHNOLOGY AND STRATEGY OF LEARNING AND TEACHING IN CONDITIONS OF COVID-19 PANDEMICS**

The world we live in is called the world of VUCA (Volatility, Uncertainty, Complexity, Ambiguity) - changeable, uncertain, complex and ambiguous. In this world, to succeed, you should not focus on the new (new - old), but more importantly on the current, relevant. Among them is gamification technology, which is well known and actively used in the world in various fields, including education. The game, its process and elements are the best strategy to achieve understanding and effective communication. Of the five trends in technology that will change education in the near future - distance education, personalization, gamification, interactive textbooks, learning through video games - four are related to gamification [2], which indicates not only the relevance of this technology, but also its strategic potential in the field of education for the next long period of time.

Gamification is the use of game elements and game mechanics in a non-game context [1]. The main purpose of gamification in building interaction between people, which would be based on game logic. Gamification in education - "the use of games, game techniques and game practices for educational purposes" [3]. The theory and practice of gamification are presented in the works of Verbach K., Hunter D., Deterding S., Khaled R., Nacke L.E., Janaki K., Mario H. and others; and gamification in education - Kapp K.M., Kiryakova G., Angelova N., Yordanova L.G, Pavlov Ya.Yu., Kochina S.A., Smagina O.O., Tkachenko O. and others.

As a technology, gamification allows you to be active participants, have a strong motivation and involvement in learning of all participants in the educational process - both those who teach and those who learn. Gamification technology includes a large group of techniques for organizing training. The main components of the gamified learning process are: users (all participants / students); tasks performed by users and progress in setting goals; points accumulated as a result of tasks; levels that users pass depending on the points; badges (awards) for completion of actions; user ratings according to their achievements. The game elements that form the game mechanics of the gamification process include: challenge (goal to achieve); tasks, tests; cooperation (performance of work on errors, mutual assistance in solving problems); feedback (information about the player's success); accumulation of resources (accumulation of knowledge indicators); rewards (points, awards, badges, virtual currency); state of victory (scale of achievements, final grade, rating, etc.).

The gamified learning process can be based on all these components together, as well as apply only some of them. You can implement these elements of gamification in the educational process with the help of educational services, which are increasing every year (Kahoot!, Zombie-Based Learning, MinecraftEdu, WorldofClasscraft and others) [3].

Game and, accordingly, gamified activities activate attention, understanding, interest, perception, thinking, interaction with educational material and other participants through the diversification of the educational process, to bring elements of entertainment through

modern ICT and 3D design. At the same time, there are limitations: "depth" and "life cycle" of acquired knowledge, time and technological resources for game development. All actions to implement gamification must be very clearly planned and require extensive experience. Gamification often requires an individual approach to the personality of each student [3].

In conditions of COVID-19 pandemics, all participants in the education process have to get used to new forms of education. One of these is distant learning. Distance learning is also not a new form of education, which features well-organized and controlled educational activities using ICT, but the main thing in it - the constant interactive communication of the student with the teacher via the Internet or local networks of the university. An equally important component of distance learning is the communication of students with each other: performing tasks in groups, conducting seminars, presentations and discussions online. Without all these interactive forms of learning and communication, the educational process at a distance becomes static and inefficient.

The main advantage of distance learning is its convenience: the student independently chooses the time and place for study, which allows him to work or study at the hospital in another city or even country. In addition, electronic resources and the latest teaching methods, as well as constant consultations with the teacher give this form of self-education additional advantages over distance learning. Among the main shortcomings are: psychological and "computer" unpreparedness of teachers, additional resources to provide the appropriate infrastructure and the Internet, lack of proctoring system during exams, students violate the principles of academic integrity in performing educational tasks, and so on.

Distance learning has provided and continues to provide a wide range of opportunities and prospects for change and improvement of educational systems, for which the critical situation creates forced conditions. Total distance learning in the context of the global COVID -19 pandemics has become a forced event in Ukraine and around the world. Under these conditions, teachers introduced new tools and used online platforms to bring the format of distance learning as close as possible to full-time (Moodle, Google Classroom, Google Meet, Microsoft Teams, Zoom, Skype and others).

The biggest challenge for both students and teachers was to support motivation, activity, involvement in learning, information and communication efficiency of the educational process. The lack of verbal contact greatly reduces the student's interest in learning, and the lack of return, interest, emotional immersion of students - to teach the material to the teacher. Gamification of the distance learning process is the answer to the biggest challenge. But, if in offline education, in particular in Ukraine, gamification is practiced actively and confidently (at all levels, directions, profiles of education, formal and non-formal, dual education, etc.), then e-learning only masters it. Rapid development of IT technologies / services, the global Covid-19 pandemic, the specifics of the generations of students Y, Z - only stimulate this process.

Thus, gaming is currently one of the key trends in education. In the context of a global pandemic and forced total distancing of learning, introduction of this educational technology is even more relevant. In general, the range of applications of gamification in education is quite wide, which allows us to talk about its strategic prospects. Further research should focus on studying the experience and practices of applying gamification in distance education (in the educational process, management, professional development of teachers, etc.).

## References

1. Verbach K, Hunter D. (2015). Involve and rule: game thinking in the service of business. M.: Mann, Ivanov and Ferber, 223.
2. Levin M. How technologies change education: five main trends [electronic resource]. - Resource access mode: <http://www.forbes.ru/tehnobudushchee/82871-kak-tehnologiiizmenyat-obrazovanie-pyat-glavnyh-trendov>.
3. Pereyaslavskaya S, Smagina O. (2019). Gamification as a modern direction of national education. Open educational e-environment of a modern university. Spec. Issue. 250-260. - Access mode: [http://www.irbis-nbuv.gov.ua/cgi-bin/irbis\\_nbuv/cgiirbis\\_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASPmeta&C21COM=S&S21P03=FILE=&S21STR=oeemu2019spetsvip.26](http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?I21DBN=LINK&P21DBN=UJRN&Z21ID=&S21REF=10&S21CNR=20&S21STN=1&S21FMT=ASPmeta&C21COM=S&S21P03=FILE=&S21STR=oeemu2019spetsvip.26)

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