

Scientific journal
PHYSICAL AND MATHEMATICAL EDUCATION
 Has been issued since 2013.
 Науковий журнал
ФІЗИКО-МАТЕМАТИЧНА ОСВІТА
 Видається з 2013.



p-ISSN 2413-1571
 e-ISSN 2413-158X

DOI: 10.31110/2413-1571
<https://fmo-journal.org/>

DOI 10.31110/2413-1571-2021-032-6-010

UDK 372.851

**ФАХОВИЙ СЕМІНАР
 «ОСНОВИ ПРОФЕСІОНАЛІЗМУ ВЧИТЕЛЯ
 ЗАКЛАДУ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ»
 В СИСТЕМІ ДУАЛЬНОЇ ОСВІТИ МАГІСТРІВ
 СПЕЦІАЛЬНОСТІ
 «СЕРЕДНЯ ОСВІТА (МАТЕМАТИКА)»**

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**PROFESSIONAL SEMINAR
 "BASIS OF PROFESSIONALISM OF TEACHER
 OF GENERAL SECONDARY EDUCATION
 INSTITUTION" IN DUAL EDUCATION SYSTEM
 OF MASTERS "SECONDARY EDUCATION
 (MATHEMATICS)" SPECIALTY**

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АНОТАЦІЯ

Формулювання проблеми. У сучасних економічних умовах переважна більшість студентів магістратури спеціальності «Середня освіта (Математика)» в НПУ імені М.П. Драгоманова перебуває в ситуації вимушеної «дуальності» їх освіти. Внаслідок цього виникають труднощі з організацією процесу навчання таких студентів, а також із якістю засвоєння ними матеріалу освітньої програми. Природним видається переведення таких студентів на дуальну форму здобуття освіти. Це дозволить вирішити значну частину зазначених організаційних та методичних проблем. Дуальна освіта вимагає принципово нових форм організації навчання. Важливим елементом у її структурі є фаховий семінар «Основи професіоналізму вчителя закладу загальної середньої освіти». Цей семінар призначений для швидкого реагування на поточні проблеми молодого вчителя, що виникають у процесі його адаптації до умов роботи в школі.

Матеріали і методи. Для досягнення цілей статті ми застосовуємо емпіричні методи: власне опитування за допомогою електронного засобу (Google forms), спостереження за навчальним процесом студентів, а також аналіз результатів їхніх досягнень. У дослідженні використано комплекс методів наукового пізнання: порівняльний аналіз для з'ясування різних поглядів на проблему; систематизація та узагальнення для формулювання висновків і методичних порад; узагальнення педагогічного досвіду і спостережень.

Результати. Зміст фахового семінару можна розбити на три основні змістові модулі – «Методи організації навчального процесу в сучасній школі», «Сучасні методи оцінювання навчальної діяльності учнів» і «Організація позакласної та виховної роботи в сучасній школі». Кожен із них призначений для формування фахових компетентностей магістранта згідно з його освітньою програмою. Зміст і порядок вивчення цих модулів не є жорстко визначеним, цей зміст має підлаштовуватися під потреби конкретного студента. Керівник семінару має можливість також залучати до роботи зовнішніх експертів, що є фахівцями з педагогіки, психології, юриспруденції, а також практикуючих учителів та адміністраторів шкіл.

Висновки. Як показує опитування магістрів та спостереження за їх роботою під час занять фахового семінару, більшість із студентів позитивно сприймають його введення до освітньої програми та задоволені якістю проведення занять. Весь матеріал навчальної програми фахового семінару магістранти вважають актуальним і потрібним для своєї подальшої роботи, що показує правильність обраного напрямку їх підготовки. Отже, педагогічно виважене застосування дуальної форми здобуття освіти із широким залученням дистанційної та змішаної форми проведення занять на основі сучасних технологій дозволить забезпечити належну якість підготовки майбутніх учителів математики.

ABSTRACT

Formulation of the problem. In modern economic conditions, the vast majority of master students of specialty "Secondary Education (Mathematics)" in NPU named after M.P. Dragomanov is in a situation of forced "duality" of their education. As a result, there are difficulties with the organization of the learning process of such students, as well as the quality of their assimilation of the material of the educational program. It seems natural to transfer such students to the dual form of education. This will solve a significant part of the mentioned organizational and methodological problems. Dual education requires fundamentally new forms of learning organization. An important element in its structure is the professional seminar "Basis of professionalism of teacher of general secondary education institution." This seminar is designed to quickly respond to current problems of young teachers that arise in the process of adapting to working conditions at school.

Materials and methods. To achieve the aims of the article, we use empirical methods: our own survey using an electronic tool (Google forms), monitoring the learning process of students, as well as analysis of the results of their achievements. The article used a set of methods of scientific cognition: comparative analysis to clarify different views on the problem; systematization and generalization for the formulation of conclusions and methodological advices; generalization of pedagogical experience and observations.

Results. The content of the professional seminar we can divide into three main content modules - "Methods of organizing the educational process in modern school", "Modern methods of assessing the educational activities of students" and "Organization of extracurricular and educational work in modern school". Each of them is designed to form the professional competencies of the undergraduate in accordance with his (her) educational program. The content and procedure for studying of these modules is not strictly defined, this content should be tailored to the needs of a particular student. The head of the seminar also has the opportunity to involve external experts who are specialists in pedagogy, psychology, law, as well as practicing teachers and school administrators.

Conclusions. According to the survey of masters and observation of their work during the professional seminar lessons, most students are positive about its introduction to the educational program and are satisfied with the quality of classes. All the material of the professional seminar curriculum is considered by master students as relevant and necessary for their further work that shows the correctness of the chosen direction of their training. Thus, the pedagogically balanced use of the dual form of education with the wide involvement of distance and mixed forms of classes based on modern technologies will ensure the proper quality of preparation of future teachers of mathematics.

Для цитування:

Школьний О. Фаховий семінар «Основи професіоналізму вчителя закладу загальної середньої освіти» в системі дуальної освіти магістрів спеціальності «Середня освіта (математика)». *Фізико-математична освіта*, 2021. Том 32. № 6. С. 64-68. DOI: <https://doi.org/10.31110/2413-1571-2021-032-6-010>
 Школьний, О. (2021). Фаховий семінар «Основи професіоналізму вчителя закладу загальної середньої освіти» в системі дуальної освіти магістрів спеціальності «Середня освіта (математика)». *Фізико-математична освіта*, 32(6), 64-68. <https://doi.org/10.31110/2413-1571-2021-032-6-010>

For citation:

Shkolnyi, O. (2021). Professional seminar "Basis of professionalism of teacher of general secondary education institution" in dual education system of masters "Secondary education (mathematics)" specialty. *Physical and Mathematical Education*, 32(6), 64-68. <https://doi.org/10.31110/2413-1571-2021-032-6-010>
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КЛЮЧОВІ СЛОВА: дуальна форма здобуття освіти; студенти магістратури; фаховий семінар; професіоналізм учителя математики; дистанційне навчання; змішане навчання; сучасні технології навчання.

KEYWORDS: dual form of education; master students; professional seminar; professionalism of mathematics teacher; distance learning; blended learning; modern learning technologies.

INTRODUCTION

Carrying out training of masters of the specialty "Secondary education (Mathematics)" in NPU of named after M.P. Dragomanov over the past few years, we have faced the problem of forced "duality" of their education. The fact is that most masters are now forced to work in schools in order to survive in today's difficult economic environment. In itself, the fact of working as a master's student is not a problem. Moreover, such work is extremely useful because it allows the future master to put into practice the knowledge acquired during training. Also, working at the school, the undergraduate has the opportunity to conduct a pedagogical experiment for his master's thesis. However, the real problem is that for the most part, students are forced to not just have a few extra hours at school, but to work there full time. As a result, the quality of preparation for such students is significantly reduced due to lack of time for preparing to lectures and practical classes and physical fatigue due to high work intensity.

Taking into account the situation described above, the leadership of the NPU named after M.P. Dragomanov organizes the educational process of masters in "Secondary Education (Mathematics)" specialty in the afternoon, as well as using distance and blended forms of education. This is facilitated by a well-established system of distance and blended learning at the university based on the MOODLE system. Thus, in fact, most master students of our university in this specialty are in a situation of forced "duality" of education, which involves obtaining education directly at their workplace. We have repeatedly talked about the benefits of this form of education for masters of respective educational programs (see, for instance, Pratsiovytyi et. al., 2019). This forced duality is currently in the process of legalization within the research project of the Ministry of Education and Science of Ukraine, which NPU named after M.P. Dragomanov have obtained and implement during 2021-2022.

Within the framework of this project, to improve the methodological and practical training of masters in "Secondary Education (Mathematics)" specialty in the respective educational programs introduced a professional seminar "Basis of professionalism of teacher of general secondary education institution", whose objectives are (Trebenko & Shkolnyi, 2021):

- assistance to undergraduates who, at the same time as their studies, work as pedagogical workers, teach mathematics in general secondary education institutions, in solving specific issues that arise in the process of teaching mathematics;
- development of skills to plan lessons, optimally choose methods and tools;
- individual psychological support at the beginning of professional activity and acceleration of the process of professional adaptation of young teachers;
- promoting the professional development of young teachers and developing their own style of teacher;
- providing qualified, effective and timely assistance in the organization of the educational process, development of educational and program documentation, introduction of new pedagogical and information technologies;
- formation of a creative approach and the need for continuous self-education.

Aim of the article. The article is intended to describe the goals, objectives and content of the professional seminar "Basis of professionalism of teachers of general secondary education institution", introduced in educational programs for masters of the specialty "Secondary education (Mathematics)" at NPU named after M.P. Dragomanov. We will also share the first experience of implementing this seminar in the educational process and the problems that arise in connection with it.

METHODS OF THE RESEARCH

To achieve this aim we use the theoretical method of analysis of methodological literature on the research question. We also exploit some empirical methods: observation of the educational process of master students in the university and analysis of their achievements as well. In this article we also use a set of methods of scientific cognition: comparative analysis to clarify different views on the problem and determine areas of research; systematization and generalization for the formulation of conclusions and recommendations; generalization of the author's pedagogical experience and observations.

RESULTS OF RESEARCH

The dual form of education involves the combination of education in the university with on-the-job training, and therefore there is a need to introduce qualitatively new organizational forms of education. It often happens that a young teacher to some extent idealizes his status as a teacher. In this case, the inevitable difficulties at the initial stage of entering the profession (during the lesson, during communication with students, parents, teaching staff, in preparation for lessons, etc.) can reduce the motivation of young teachers. Methodological support provided in a timely and correct manner will help master student to make sure that he (she) choose a profession. In our opinion, in the conditions of the dual form of education it is the professional seminar "Basis of professionalism of teacher of general secondary education institution" will allow for methodological and psychological support of the master.

In creating the curriculum of the professional seminar, we relied on the Professional Standard for the profession "Teacher of General Secondary Education Institution" (Ministry of Economy of Ukraine, 2020) approved by the Ministry of Economic Development, Trade and Agriculture of Ukraine. According to this standard, "the purpose of a teacher's professional activity is to organize the education and upbringing of students during their full general secondary education by forming key competencies and worldviews based on universal and national values, as well as developing intellectual, creative and physical abilities that are necessary for successful self-realization and continuing education" (paragraph 1.1. of the Professional Standard).

It is clear that to achieve this goal, the teacher should be properly trained and have the appropriate general and professional competencies. These competencies, grouped by job function, are also listed in Section 5 of the Teacher Professional Standard. Thus, the main job functions of a teacher are the following (Ministry of Economy of Ukraine, 2020):

- *teaching students subjects and integrated courses* (contains language and communication competence, subject and methodological competence, information and digital competence);

- *partnership interaction with participants of pedagogical process* (contains psychological competence, emotional and ethical competence, competence of pedagogical partnership);
- *participation in the organization of a safe and healthy educational environment* (includes inclusive competence, health-preserving competence, projecting competence);
- *management of the educational process* (includes prognostic competence, organizational competence, evaluation and analytical competence);
- *continuous professional development* (contains innovative competence, ability to learn throughout life, reflective competence).

An educational program in general is designed to ensure the performance of these job functions and the availability of relevant professional competencies. The professional seminar "Basis of professionalism of teachers of general secondary education institution" plays not the main but significant role in the process of teaching masters, as it must flexibly and quickly respond to current problems of young teachers that arise during his (her) work at the school. Therefore, the program and sequence of studying the content modules of the professional seminar and their parts is not rigid and can be adjusted by the head of the seminar to the various learning situations that arise in the process of dual education of masters. If necessary, the seminar head can change the sequence of studying the topics of the curriculum according to the needs of students.

For example, at the beginning of this academic year, masters of the specialty "Secondary Education (Mathematics)" in NPU named after M.P. Dragomanov experienced significant problems with the organization of the class team in a pandemic condition. According to the students' request, we involved experienced class supervisors and medical workers of Kyiv schools (school № 58 and Lyceum "Universum") within the framework of the professional seminar. As a result, master students received timely operational advice on issues that urgently concerned them, thus ensuring the proper quality of their own work at school.

The head of the professional seminar, being a specialist in the didactics of mathematics, has the authority to involve in his (her) work specialists in the field of pedagogy, psychology, basics of medical knowledge, political sciences, law, etc. This maintains a high level of professional assistance to seminar participants. On most issues related to the methodology of teaching mathematics, the seminar leader conducts classes independently. However, if necessary, he (she) can also involve, for example, experienced mathematics teachers, who will be able to share their own experiences with master students.

Let's highlight **the main content** of the professional seminar "Basis of professionalism of teacher of general secondary education institution." Among the issues that should be considered during the seminars, we include the following.

Content module #1 "Methods of organizing the educational process in modern school".

- Instructional and methodological materials. Directive documents.
- Rights and responsibilities of teachers, students and parents.
- Organization of the educational process. Lesson planning.
- Effective approaches and technologies of organization of educational process.
- Maintaining school documentation.
- Modeling of a modern lesson. Reasons for a failed lesson, the rules of a successful lesson.
- Analysis of the results of educational and cognitive activities of students.
- Assessment of student achievement. Reasons for student failure in math lessons.
- Ways of forming students' cognitive interest.
- Ways to intensify the educational and cognitive activities of students.

This module provides for the study of the main legal documents governing the activities of teachers in Ukraine, in particular, the laws On Education (Verkhovna Rada of Ukraine, 2017), On Complete General Secondary Education (Verkhovna Rada of Ukraine, 2020), On Labor Protection (Verkhovna Rada of Ukraine, 1992), resolutions of the Cabinet of Ministers of Ukraine (Cabinet of Ministers of Ukraine, 2016 and Cabinet of Ministers of Ukraine, 2020), orders of the Ministry of Education and Science of Ukraine regulating educational activities (MES of Ukraine, 2018, etc.) (full list of documents is given in the Professional Standard of Teacher in section 3). If necessary, the head of the seminar can involve professional lawyers in the analysis of normative documents, who will explain to master students the nuances of the law norms and answer questions that may arise about their studying. The heads of educational institutions (school principals) and supervisors of teachers' educational work may be involved for the explaining of the peculiarities of maintaining school documentation and effective approaches and technologies for organizing the educational process. This academic year, such experience was successfully implemented during the professional seminar in NPU named after M.P. Dragomanov.

Also, the first content module includes methodological issues related to the ability to properly build a successful math lesson, as well as analyze it after its accomplishing. An important part of this content module are methods of activating cognitive activity of students, which allow to turn the learning process for students into an interesting and cognitive adventure, contribute to the formation of a positive attitude to mathematics and respect for the work of mathematicians. We find it valuable to use appropriate and pedagogically balanced application of humorous plots of problems and extensive use of plot problems with practical content.

Content module #2 "Modern methods of assessing students' learning activities".

- Teaching methods and technologies. Use of modern pedagogical and innovative technologies.
- Features of learning in the age of digital technologies.
- Learning environment, favorable and optimal for achieving effective learning.
- The teacher's relationship with students, parents. Relationships with the teaching staff.

In this module, students get acquainted with the modern theory of assessment of academic achievement in mathematics of secondary school students in Ukraine (see, for example, Shkolnyi, 2015), in particular, with the application of digital technologies. Another component of the second module is the psychological preparation of masters to work in the student's collective. For example, it is extremely important to create a friendly and creative atmosphere on math lessons, to be able to build friendly working relationships with students and their parents. For such seminars, the head may involve specialists in the field of psychology who will help undergraduates to better understand these issues.

Content module #3 "Organization of extracurricular and educational work in modern school"

- Organizing and conducting extracurricular activities in mathematics.
- Individualization of learning. Work with gifted children.
- Features of working with children that need of enhanced pedagogical attention.
- Planning of educational work. Reflective analysis of the gained experience of educational activity.
- Self-education as a component of individual professional development of a teacher: directions, main components, plan development, criteria for evaluating results.

The material of this module draws students' attention to the importance not only of qualified teaching of mathematics, but also of the educational and developmental components of students' school life. The head of the seminar can involve experienced supervisors of teachers in the educational work of schools, organizers of class collectives, etc. for the lessons of third module. They will help to build educational work more efficiently and effectively on the example of their own experience. At the end of this module, master students learn to reflect competently on the experience gained in all types of teacher activities at school, as well as finally understand the importance of continuous teacher training throughout all their professional careers.

As mentioned above, the content of the professional seminar is basic and should be supplemented by a discussion of real cases that students have encountered in the process of their work at school. The first year of the professional seminar "Basis of professionalism of teacher of general secondary education institution" at National Pedagogical Dragomanov University showed that it is impossible to predict in advance what problems young mathematics teachers will face in the process of obtaining a master's degree in dual education at school. Therefore, the head of the seminar should be ready, in fact, for any surprises and be able to quickly adapt the work to the needs of students.

We conducted a short **survey of masters** of the specialty "Secondary Education (Mathematics)" of NPU named after M.P. Dragomanov, who are students of the professional seminar. Due to the pandemic situation, the survey was conducted online using Google forms. We present to readers the results of this poll.

Question #1. How useful, in your opinion, is the introduction of a professional seminar "Basis of professionalism of teacher of general secondary education institution" in your educational program for your professional training?

- Definitely useful - 60% of respondents.
- It is more useful than not - 40% of respondents.
- It is difficult to answer – no answers.
- Rather not useful than is – no answers.
- Definitely not useful – no answers.

The general positive attitude to the professional seminar shows that its introduction is a relevant and generally correct decision of the developers of the educational program of master's training.

Question #2. What material of the professional seminar do you suppose as the most necessary for work at school (you can choose several answers)?

- Methodical advices on conducting mathematics lessons – 60% of respondents.
- Methodical advices on the peculiarities of assessing student achievement – 20% of respondents.
- Advices on the organization of class collective – 60% of respondents.
- Advices on the peculiarities of communication with parents of students – 60% of respondents.
- Advices on the specifics of working with students that need of increased attention – 40% of respondents.
- Advices on the peculiarities of educational work at school – 40% of respondents.
- Advices on ways of self-organization and reflection at work – 40% of respondents.
- Interpretation of legal documents governing the educational process – 80% of respondents.

As you can see, all material of the seminar is interesting for students, but the most unexplained are the legal issues related to the organization of the teacher's work. This is to say that this aspect of young teacher training needs increased attention and improvement. For example, updated master's degree programs may include academic disciplines that explain the legal aspects of a teacher's work. The need to involve legal advisers in the work of the professional seminar is also obvious.

Question #3. What material, in your opinion, should be additionally included in the program of the professional seminar (open question)?

The majority of respondents expressed the opinion that the material presented in the program is quite sufficient. This shows the thoughtfulness and balance of the seminar curriculum. It is possible that over time, when students gain more experience in the dual form of education, they will be able to become more actively involved in the formation of its content. In addition, this survey is being conducted for the first time, so next year such wishes may appear.

Question #4. Please rate the degree of your satisfaction with the quality of the professional seminar on a 10-point scale (10 – completely satisfied, 1 – completely dissatisfied).

The average score on the degree of satisfaction is 9.6 out of 10. This indicates a high assessment of the quality of the professional seminar. Thus, we can generally conclude that the direction of work with masters has been chosen correctly, the professional seminar performs its function properly, it is only necessary to support and develop it.

DISCUSSION

We realize that the dual form of education, in addition to its advantages, has its drawbacks. Indeed, not every student major in "Secondary Education (Mathematics)" specialty is able to master the chosen profession at the appropriate level in conditions of working at the school full time. For many of these masters, the classical approach with face-to-face lectures and practical classes and internships under the guidance of teachers would be more effective. However, in today's difficult economic environment and in the pandemic situation, the implementation of the classical approach is facing significant difficulties, and therefore, we should look for new forms and ways to overcome them.

According to the results of the survey of students of "Secondary Education (Mathematics)" specialty in NPU named after M.P. Dragomanov, most of them approve of the introduction of the professional seminar "Basis of professionalism of teachers of general education institution" in educational programs. They believe that all the material of this seminar without exception is useful for the professional development of young mathematics teachers. The legal training of young teachers needs additional attention, they are interested in it, because in today's world this aspect is becoming increasingly important.

Communication with external experts involved in the seminar (class supervisors, school administrators, school psychologists) shows that such work is interesting not only for master students, but also for these experts. Indeed, in this way young teachers will master all the nuances of their profession faster and better and will keep the level of quality of their work at the proper level. And this is needed not only for the graduates themselves, but also for the university management and interested employers.

CONCLUSIONS AND PERSPECTIVES FOR A FURTHER RESEARCH

The current period of the global pandemic, which has lasted for almost 2 years, has created new challenges for the education system of Ukraine as a whole and for the training of masters of specialty "Secondary Education (Mathematics)" in NPU named after M.P. Dragomanov in particular. During this period, the classical approaches to obtaining a master's degree can't be implemented properly, they do not provide the required level of quality training for future teachers of mathematics. Distance and blended form of education in its classical interpretation is also unable to completely solve the problem of forced "duality" of master's students due to a number of reasons, the main of which are economic in nature.

In our opinion, one of the ways to respond to these challenges is to enable master's students to study in legal dual form of education in combination with distance and blended learning. This way of obtaining education requires fundamentally new approaches to the organization of the educational process, in particular, the active involvement of modern computer-based learning technologies. Therefore, the relevant disciplines should be included in the educational programs for the training of masters that are future teachers of mathematics.

One of such disciplines is a professional seminar "Basis of professionalism of teacher of general secondary education institution". Its purpose is to provide methodological, psychological and organizational assistance to a young mathematics teacher who is both studying and working at the school as teacher of mathematics. The short experience of implementing this seminar does not allow us to immediately draw general conclusions about its effectiveness, but a survey of students and communication with experts involved in this seminar, suggest that the direction of work has been chosen correctly.

The functioning of the professional seminar is already giving the first positive results. Master students feel more confident and in the workplace, feel the support of university methodologists, experienced teachers and school administrators. The introduction of a dual form of education will also allow each student to be assigned a separate mentor from among the teachers at the school where he or she works. This will combine the efforts of faculty and employers to train highly qualified teachers. We believe that the pedagogically balanced use of the dual form of education with the wide involvement of distance and blended forms of learning based on modern technologies will ensure the proper quality of training of masters in "Secondary Education (Mathematics)" specialty at National Pedagogical Dragomanov University in particular and in Ukraine generally.

This work is partially supported by Ministry of Education and Science of Ukraine, project "Dual form of education and blended learning in the system of teacher training in mathematics", state registration number 0121U001009.

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