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OPPORTUNITIES TO IMPROVE THE PROFESSIONAL QUALITIES OF TEACHERS TO WORK IN THE DISTANCE MODE OF TEACHING

OPORTUNIDADES PARA MEJORAR LAS CUALIDADES PROFESIONALES DE LOS DOCENTES PARA TRABAJAR EN LA MODALIDAD DE ENSEÑANZA A DISTANCIA

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RESUMEN

The purpose of the study is to discover opportunities to improve the effectiveness of the teacher's professional qualities in view of the development of distance education. On the basis of empirical research using the survey method, the dynamics of professional qualities of teachers when working in the distance mode before and after the introduction of the educational and methodical complex for professional development in work with the distance education system Moodle are assessed. The research reveals positive results indicating an increase in the professional level of teachers working in distance mode after the implementation of the educational and methodical complex. The study concludes that the professional qualities of teachers in the distance mode of work can be improved if higher education institutions develop and implement the respective educational and methodical support.

Keywords:

Distance learning, educational and methodical complex, advanced training, Moodle.

RESUMEN

El propósito del estudio es descubrir oportunidades para mejorar la eficacia de las cualidades profesionales del docente de cara al desarrollo de la educación a distancia. Sobre la base de una investigación empírica que utiliza el método de la encuesta, se evalúa la dinámica de las cualidades profesionales de los docentes cuando trabajan en la modalidad a distancia antes y después de la introducción del complejo educativo y metódico para el desarrollo profesional en el trabajo con el sistema de educación a distancia Moodle. La investigación revela resultados positivos que indican un aumento en el nivel profesional de los docentes que trabajan en la modalidad a distancia después de la implementación del complejo educativo y metódico. El estudio concluye que las cualidades profesionales de los docentes en la modalidad de trabajo a distancia pueden ser mejoradas si las instituciones de educación superior desarrollan e implementan el respectivo apoyo educativo y metódico.

Palabras clave:

Educación a distancia, complejo educativo y metódico, formación avanzada, Moodle.

INTRODUCTION

Today, the development of the digital environment and the global Internet network encompasses virtually all spheres of human life. In this light, the education system becomes increasingly concerned with the issue of how to provide the learning process with appropriate educational and methodological tools and curricula so as to assure that higher education, teachers, and the faculty development system meet the current global and national challenges, offer up-to-date support in the sphere of digital technology, and form and advance modern digital competencies (Ivashkina et al., 2022).

Distance learning (distance learning) requires special preparation of the teacher to carry out pedagogical activities (Ilina et al., 2021; Afanasiev et al., 2021). To work effectively in the system of distance learning, the teacher must not only be competent in classical pedagogy, but also have knowledge of information technology, be competent in the methods of organizing and conducting distance learning, and take into account the psychological characteristics of interaction with students in the process of distance learning (Vrazhnova et al., 2021; Golubeva et al., 2021).

The problem of the professional qualities of the teacher in the conditions of distance learning in universities is caused by the insufficient development of the theory and practice of the informatization of education and contradictions between society's demand for highly qualified specialists in any industry and the lack of focus on production in higher education; contemporary requirements to the digital competence of university graduates and the insufficient use of the pedagogical opportunities provided by distance learning (Glebov et al., 2021); the needs of modern youth for interactive professional training and distance education and the insufficient readiness to work in the distance mode on the part of teachers (Andreev et al., 2021; Grigoryeva et al., 2021).

The above suggests that analysis of the issues of specially organized training of teachers for distance learning is a topical and expedient objective.

In distance learning, the teacher's personality deserves special attention since the teacher's professional improvement in distance learning is a process that is highly demanded on the one hand and inert and passive on the other. Kolykhmatov (2018), argues that teachers are not prepared to use information technology in the educational space, and, regrettably, students are sometimes more proficient in using computers than their professors. Scientists (Gudmundsdottir & Hatlevik, 2018) point out that pedagogical personnel training is a critical sphere of

the utilization of distance learning opportunities. Special training of teachers is one of the key elements of efficient work in the distance mode.

The essence of the teacher's work in distance learning is the provision of educational and methodical, psychological and pedagogical, and organizational assistance to students in the system of distance learning by means of in-person and distance support. Thus, given the large share of independent work in the distance mode, the qualitative learning outcomes are a well-thought-out system of the teacher's assistance to students in learning.

Harper et al. (2004) emphasize that a vital element of distance learning is constituted by specific personnel support with qualitatively new requirements for the teacher, which range from a fundamentally new level of knowledge and skills in both their profession and digital technology to competence in the conceptual issues and didactics of distance learning. The teacher becomes a consultant, a qualified opponent, a developer of scientific and methodological support of distance materials.

Webster & Hackley (1997), understand the teacher's support for students in the system of distance learning as a system of interrelated actions and measures. This system is realized through a variety of forms and techniques and provides qualified assistance to those studying in the distance mode throughout the entire learning process by means of different types of pedagogical activity (preliminary diagnostics, design of the educational process with an emphasis on goal-setting, motivation of students for learning activities, management of interaction with students, organization of the learning process, reflection, communication, control).

A study by Gromova (2011), establishes that the teacher's support of students in distance learning has to go through several stages, specifically:

1. Planning and preparation. At this stage, students' needs for support and assistance are diagnosed; the primary level of their knowledge and skills is determined; a package of methodological materials for pedagogical support is prepared.

2. Direct support. This stage involves the advancement of students' knowledge, the development of their skills and abilities, consultations, testing; information and analytical support; organization of information exchange and contacts between students; actualization of students' inner strengths and reserves.

3. Application of the results of training and final analysis. This stage provides consolidation of the knowledge obtained, acquisition of skills and abilities; development of

experience in solving professional problems; monitoring of the successes and changes of students; the final assessment of the effectiveness of pedagogical support.

The requirements for the professional activity of university research and teaching staff and the role of new educational technologies in this deserve a separate mention. Scientific research (Picciano, 2017) highlights the characteristic features of those teachers who use new technologies in the educational process. Such professors are active, do well in motivating their students, are flexible, easily adapt to new working conditions, positively perceive changes, and are able to make predictions and move forward.

Scholars (Shevelev &Kuznetsova, 2011) actively oppose the belief that "with the introduction of distance learning, teachers will become unnecessary". On the contrary, the introduction of distance learning expands the teacher's opportunities for self-realization (Elstad & Christophersen, 2017). There is a division of labor of teachers, their specialization: an expert, course author, distance course methodologist, course designer, coordinator, specialist in the interactive presentation of training courses and control of educational and cognitive activity of students, etc.

At this point, we can note some attempts at improving teachers' qualifications in the implementation of distance learning: distance seminars and masterclasses are held on the outlined issue in the form of webinars, communication via Skype is actively used. According to researchers (Manning et al., 2003), authoring advanced training courses for teachers should prepare them for designing distance learning systems, because these systems change the "habitual life" of a teacher, contribute to their future development, and advance the pedagogical skills of communication and cooperation in the educational environment.

Scientists (Nikulin & Starichenko, 2018) are inclined to believe that the effectiveness of teachers' work in the distance mode depends on the level of their readiness for professional self-improvement by means of ICTs. However, teachers' readiness for professional self-improvement while working remotely at a university remains low, and the quality of learning remains coveted and only declared in official orders and reports (Khamzina, 2014).

The hypothesis of the study suggests that the development and implementation of specialized educational and methodological support in higher education institutions will improve the professional qualities of teachers working in the distance mode.

The goal of the study is to analyze the dynamics of teachers' professional qualities in view of the development of digital education.

Research objectives include:

1. compiling a survey to determine the level of professional qualities of teachers when working in the distance learning mode;

2. development of the educational and methodical complex (EMC) to improve the professional skills of teachers when working with the Moodle distance learning system;

3. obtaining results on the level of professional qualities of teachers when working remotely.

MATERIALS AND METHODS

To achieve the goal set in the study, we define an approximate set of theoretical and empirical research methods:

theoretical methods (analysis, synthesis, comparison, generalization) – to study scientific literature regarding the role of teachers in distance learning;

empirical methods (survey, pedagogical experiment) – to determine the dynamics of professional qualities of teachers in distance learning before and after the introduction of the EMC.

The experimental study includes the following stages:

- conducting a survey to identify the professional qualities of teachers in distant learning (the content of the survey is shown in Table 1);

- developing and introducing the EMC for the development of teachers' professional qualities in working with the Moodle distance learning system;

- analyzing the results of the study.

The criterion for the level of teachers' professional qualities when working in the remote mode is their mastery of various activities in the Moodle system, which is assessed via a specially developed survey (Table 1) with three answer options for each item ("perfectly mastered", "not perfectly mastered", "not mastered").

For the purpose of improving teachers' professional skills, we introduce an EMC, in the process of implementation of which the teachers:

- get acquainted with the regulatory documents on the implementation of distance learning in higher education;

- create curriculum templates and a competency repository and distribute competencies across courses and student activities;

- learn to assess the degree of development of students' competencies using the Moodle distance learning system;

- study content management tools and different forms of class organization (lecture, practical class, forum, chat, glossary, seminar, test, wiki);

- create a bank of test questions of varying difficulty and form, tests to monitor the learning and cognitive activities of students;

- design and manage a distance learning course (DLC), develop their own knowledge assessment systems, use time limits (controlling the submission of the tasks completed by the students, recording the tasks submitted late, allowing or prohibiting students to retake the test tasks);

- develop teaching guidelines for students' learning activities in the DLC.

The experimental study is conducted on the basis of the Academy of public administration and the K.G. Razumovsky Moscow State University of Technology and Management.

Participants in the study are teachers from various departments: humanities (pedagogical) and technical (a total of 76 teachers).

In mathematical processing of the results of the study, the percentage of teachers' self-assessment of the level of mastery of various activities in the Moodle system is established to determine the general direction of the shift in the studied attributes (teachers' mastery of activities in the Moodle distance learning system) using the G sign test.

The effectiveness of using DLCs to increase the level of professional qualities of teachers in distance learning is substantiated using the G signs test, the null and alternative hypotheses for which are formulated as follows:

H0: the prevalence of a rise in teachers' self-assessed level of proficiency in various activities in the Moodle system is random.

H1: the prevalence of a rise in teachers' self-assessed level of proficiency in various activities in the Moodle system is not random.

Critical values of the G sign test: 30 ($p < 0.05$); 27 ($p < 0/01$).

Calculation of the G sign test is carried out by compiling the corresponding table in Microsoft Excel.

RESULTS AND DISCUSSION

The results of the survey of teachers before and after the implementation of the EMC are presented in Table 1.

Table 1. Survey results.

Content of the teacher's work in the Moodle distance learning system	prior to the EMC			after the EMC		
	Perfectly mastered, %	Not perfectly mastered, %	Not mastered, %	Perfectly mastered, %	Not perfectly mastered, %	Not mastered, %
Development of curriculum for the DLC; DLC structure	31	65	4	31	65	4
Creating content management tools for the DLC	40	58	2	40	58	2
Development of methodological recommendations for laboratory, practical, and seminar classes	42	56	2	42	56	2
Learning outcomes assessment (assignments for independent work, calculations, tests, course projects)	39	58	3	39	58	3
Organization of remote control of students' learning activities	45	53	2	45	53	2
Assessment of students' learning activities in the form of a gradebook	36	60	4	36	60	4
Creation of a bank of test tasks of various forms; development of tests	34	63	3	34	63	3
Professional and informational communication with students via the "Forum"	34	63	3	34	63	3
Creation of a thematic "Forum" for an online seminar	32	62	6	32	62	6
Development of methodological recommendations for the organization of communication via the "Forum"	34	65	1	34	65	1
Holding individual and group consultations in the "Chat"	31	66	3	31	66	3
Development of methodological recommendations for the organization of online consultations	30	67	3	30	67	3

The preliminary survey shows that the teachers have an insufficient level of professional qualities in distance learning. Specifically, the minimum values are found in the following indicators: "professional and informational communication with students via the 'Forum'" – 3%, "creation of a thematic 'Forum' for an online seminar" – 3%. Such a low value is due to the fact that the teachers do not have enough experience using online means of communication to conduct consultations and classes. The best results are obtained in the parameters: "holding individual and group consultations in the 'Chat'" – 15%, "learning outcomes assessment (assignments for independent work, calculations, tests, course projects)" – 11%. This finding can be

explained by the fact that the teachers do communicate in chats on social media. In addition, some of the teachers upload and save reports on students' learning outcomes in the Moodle system. However, on the whole, this is a small number of enthusiastic teachers.

After the implementation of the EMC, a follow-up survey is conducted.

Analysis of the data obtained after the introduction of the EMC indicates that the greatest positive changes in teachers' work are related to the development of computer tests (45% report perfect mastery). This is attributed to the fact that teachers have experience in using test control and diagnostics of the level of students' training. Positive changes are also observed among the teachers in the development of methodological recommendations for laboratory, practical, and seminar classes (42% perfect mastery) and the creation of DLC content management tools (40% report perfect mastery).

The smallest positive changes in the knowledge and skills of the teachers are found in the organization of online interaction between the teacher and students, the development of methodological guidelines for the organization of online seminars (30% mastered perfectly) and conducting individual and group consultations by means of the "Chat" (31% report perfect mastery). Such insignificant dynamics can be explained by the lack of practical experience of teachers in distance learning.

The statistical probability of the prevalence of positive changes in the teachers' professional qualities after the implementation of the EMC at two levels of significance is confirmed by the calculation of the G sign test (= 2; <).

Today, according to researchers (Nikulina & Starichenko, 2018), only those who are able to combine and apply their knowledge and skills in pedagogy and psychology, special disciplines, and ICT can adapt to the new role of teachers in a distance learning environment.

Within the framework of our study, for the teachers, the improvement of professional qualities in preparation for distance learning pursues practical and cognitive goals: the development of a distance learning course, the creation of computer tests on the discipline, mastering new online tools for education. In this regard, the teachers are given the right to choose the content, methods, and forms of training. For example, as part of the EMC, the teachers develop a bank of control questions and a glossary containing control questions.

To check the learning outcomes uploaded in the form of report files for tests, labs, coursework, calculations, and practical work, the teachers use the "Assignment" element of the distance learning course. Students upload their reports to the system, and the teacher checks, grades, and comments on them. The professor checks the integrity and content of the report in their visual form for the presence of cover sheets, the content of the explanatory note prepared in accordance with the requirements of the department and the university. If necessary, the teacher sends the student a file with comments. In case the work is not graded after the checking, the student reads the comment, follows the given requirements, and re-uploads the report.

Particular attention should be paid to the consideration of students' learning activities. In the Moodle systems, the teachers control and monitor the products of students' learning activities using records in the electronic grade book. The teacher pre-sets the grade log, establishes the forms of student's work on the distance learning course: viewing and studying lectures, completing tests, laboratory assignments, coursework, calculations, passing thematic and final testing, participation in seminars, discussions, consultations, development of the glossary, participation in quizzes. For each type of learning activity, the teacher establishes grading criteria, the due time, the possibility of retake, the content of competencies, and other parameters. The electronic grade book provides for greater executive discipline among faculty and students by tracking their activities.

Our findings are supported by the results of other studies (Manning et al., 2003; Shevelev &Kuznetsova, 2011), which reveal the requirements for the professional qualities of a teacher working in the distance mode, according to which the teacher must possess:

- knowledge of: a) the basic principles of operation of telecommunications systems, cloud technology; b) the features of video conferencing, webinars, forums; c) the features of students' independent online activities in distance learning; d) the factors that stimulate students' engagement online;

- the skills of: a) working with information resources (databases, information services); b) using a set of services provided by the environment and cloud technologies; c) providing learning material so as to ensure that the student's work is effective, individualized, and independent of place and time; d) conduct testing of students' learning activities; e) actively use the communicative potential of computer networks to organize communication between participants in the educational process; f) be able, if not to create courses, then at least to adjust the existing ones to the new requirements of the educational process;

- abilities to: a) navigate information; b) use a specific information and educational environment.

Manning et al. (2003), argue that the effectiveness of teachers' work in the distance mode depends on a number of conditions. Based on the analysis of the specific activities of the teacher, the requirements for them, the problems that the teacher may face, the authors identify three groups of conditions that ensure the effective performance of the teacher:

- pedagogical, related to the psychological and pedagogical principles of distance learning and the organization of the pedagogical process, the use of diverse and appropriate goals at each stage of distance learning, ensuring interactivity throughout the learning process;

- organizational and communicative, including knowledge of the psychology of communication, ways to increase students' motivation and engagement in the learning process, the choice of the right leadership and communication style;

- technical, including the provision of access to computer communications (both for teachers and students), as well as computer literacy of the participants in distance learning.

Thus, work in the distance mode imposes special requirements for the level of professional training and qualifications of teachers involved in the organization and conduct of distance courses.

In our view, the effectiveness of teachers' work in the distance mode depends on their readiness to carry out this work, including both professional pedagogical readiness (consideration of the psychological and pedagogical principles of distance learning, diagnostics of learning goals, the use of a variety of pedagogical forms, methods, and techniques), technical readiness (mastery of the information and educational environment, development of multimedia courses, computer literacy), and psychological readiness (understanding of the psychology of communication, rules of etiquette, ways to increase the motivation and engagement of students).

CONCLUSIONS

The conducted analysis of scientific and methodical literature substantiates the need to address the problem of improving teachers' professional qualities, which arises due to their unpreparedness to work in higher education institutions in the distance mode. The results of the theoretical analysis indicate that the effectiveness of teachers' work in the distance mode is contingent not only on the quality of educational materials (courses) but also on their

own competence. Therefore, both the content and the pedagogical organization of distance learning (both in the phase of designing the course and in the process of its use) are priorities.

At the current stage of development of distance learning, there arises the need to advance the information and communication competence of the teacher, teach them the forms and methods of organizing distance education activities, familiarize the teacher with the methodology of developing a distance learning course, the methodology of interactive chats and online classes, the development of fragments of distance learning lessons of different types, teach the teacher how to reflect on their own activities.

The conducted study includes a survey assessing the level of teachers' professional qualities in working in the distance learning mode, the results of which indicate an unsatisfactory level of these qualities. An educational and methodical complex is developed and introduced to improve the professional qualities of teachers in working with the Moodle distance learning system. The study reveals positive results in elevating the professional qualities of teachers in working in the distance mode. Thus, the professional qualities of teachers in distance learning can be improved if higher education institutions develop and implement appropriate educational and methodical support.

Thus, the study confirms the hypothesis that the development and implementation of specialized educational and methodological support in higher education institutions improve the level of professional qualities of teachers working in the distance mode.

An analysis of the specifics of the subject preparation of teachers to work in the distance mode can become a study prospect.

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