

Experience of Applying the Blended Learning Model in the System of Professional Development of Primary School Teachers in the Kyrgyz Republic

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Abstract: *Enhancing teacher competence in the Kyrgyz Republic is crucial due to ongoing education reforms. This is driven by the need to improve education quality and external factors like digitalization, quarantine restrictions, and widespread internet use. The purpose of work was to explore the model of blended learning and its use in the professional development of educators in the Kyrgyz Republic. The study used the methods of questionnaires, observation, pedagogical reflection, and statistical, pedagogical experiment. As a result, it was found that blended learning can be implemented based on the Moodle platform, which allows for online consultations, lesson observation and pedagogical reflection. The research proved that the development of a training course on blended learning is based on the establishment of special training and methodological resources for the retraining of master trainers and regional mentor teachers. In turn, the latter provides mentoring support in the process of improving the competence of primary school teachers. The research presents statistical results of the diagnostic, formative and control-monitoring stages of the study. In the course of the research, the model of blended learning in the system of teachers' professional development was developed and its successful approbation was performed, which was characterized by positive results.*

Keywords: IT-competence, professional development, information and communication technologies, mentor, pedagogical reflection

1. Introduction

The dynamics of the development of modern society affect the scope of requirements for specialists in various industries. The educational environment is no exception and is influenced by several factors, including internal and external. They cause the reforming of the requirements that teachers must comply with for the qualitative realization of their functions (Kulakhmet et

al., 2022). Considering this, the approach consisting of continuous professional development of educators, namely the development of their skills for independent development of a promising algorithm of professional self-improvement, is of particular relevance (Kumar et al., 2021; Rachmadtullah et al., 2020). This issue has become particularly prevalent due to the spread of COVID-19 and the introduction of quarantine measures in the Kyrgyz Republic (Akmatov & Temiralieva, 2023; Bocheliuk et al., 2021). It is explained by the fact that the educational environment has been transformed from conventional full-time education to a mixed form. Therewith, after the lifting of restrictions, the trend of blended learning continued to develop due to the active spread of digital technologies and the Internet in the educational sphere (Goos et al., 2020; Koshoeva et al., 2023; Singh et al., 2021).

Based on this, there is an urgent need for professional development of primary school teachers in the Kyrgyz Republic to develop them both as professionals and as individuals oriented towards socio-cultural improvement of the state and society. The essence of this approach is to learn new skills and knowledge and to apply them in teachers' professional activities, namely teaching others (Saboowala & Manghirmalani Mishra, 2021; Şentürk, 2021). As a result, educators will be able to disseminate innovations independently and consequently improve the educational environment. This process is an integral element of continuing education, the purpose of which is based on expanding the worldview of educators through pedagogical innovation and improving their creativity (Denysiyuk, 2023). Notably, different elements of this problem are disclosed in pedagogical scientific doctrine, with researchers drawing attention to the principles responsible both for the professional retraining of teachers and the understanding of blended learning in general (Bocheliuk et al., 2022; Hashemi & Si Na, 2020).

Akmatov and Temiralieva (2023) paid attention to the issue of blended learning in the context of teacher professional development. They concluded that this form of education was the most effective as it could be combined with the professional activities of teachers. Accordingly, the researchers pointed to the appropriateness of using online technologies in the study of lecture material and classroom sessions in discussions and consultations with mentors. The researchers put forward in the research the position that teachers were obliged to undergo professional development every semester. Akmatov and Temiralieva justified this idea by the fact that educational trends and technologies were constantly changing, thus a modern teacher must develop simultaneously with them and provide quality educational services to students. In turn, Bukabaeva and Kaldybaeva (2021) indicated the priority role of distance education technologies in the system of professional development of teaching staff. The researchers emphasized the priority role of distance education technologies in the system of professional development of pedagogical staff. Bukabaeva and Kaldybaeva identified this approach as the most economical for teachers, in financial and time contexts. According to the researchers, the acquisition of new knowledge by a teacher can be implemented simultaneously in the course of their work at school. The researchers concluded that there was no need to separate these processes, nor was it necessary to remove teachers from their professional activities for the duration of the training.

On a related note, Musina and Liu-Ming-Ching (2020) conducted an analysis of the educational process in rural areas within the framework of distance learning. In their summary, the researchers emphasized the challenges of technical nature that the participants faced and stressed the importance of offering courses focused on equipping teachers with the skills to

effectively utilize information and communication technologies. Dunganova and Galaguzova (2023) analyzed the impact of digitalization and Internet resources on the level of competence and competitiveness of educators. As a result, they found a correlation between them, as the level of development of skills in the former determines their professional success and efficiency. The researchers concluded that it was the educational conditions that determined the necessary level of competence that a modern primary school teacher should possess.

Based on the above findings, the study's purpose was established, which is to analyze the features of the blended learning model in the context of professional development of educational specialists, and primary school students in Kyrgyzstan. In this regard, the following tasks have been developed:

- to explore the republican experience of implementing blended learning.
- to characterize the main principles of this approach.
- to develop a pedagogical model of blended learning for the professional development of primary school teachers.
- to implement the approbation of the developed model, to indicate its results.

2. Materials and Methods

Scientific methods were comprehensively used in the course of the research, the results of which complemented each other. The method of questioning in the research is necessary for the process of providing professional development of teachers and organizing pre- and post-tests. Based on it, the research of diagnostic and control assessments of the effectiveness of blended learning in the above process occurred. The structure of the questionnaires given to the respondents was twofold. The first block included personal data and the second the content aspect, both of which were confidential. Primary school teachers (N=11901) of the Kyrgyz Republic participated in the questionnaire. Among them, there were 65 males and 11836 females. The age of respondents ranged from 25 to 60 years old. The duration of the questionnaire and approbation of the developed pedagogical model was three months, considering online and offline activities. Accordingly, based on this method, the research determined the level of teachers' readiness for blended learning, based on the following components: IT competence, development of independent learning skills, and development of individual educational trajectory. The questionnaire survey was conducted on the Internet using Google Forms.

To implement the observation method, the researchers used electronic forms and an application for coaching and methodological support for teachers developed on the Tangerine platform called SabakApp. The mentors who attended the offline lessons of the trainee teachers completed them and provided recommendations. This method was used at three stages, namely before the lesson, during the lesson, and after the lesson. The teacher had to discuss with the mentor what priority issues should be addressed in the context of the construction of the teaching lesson plan and structure. In addition, the mentors used the observation method during the lesson. They only observed the pre-determined questions. After the lesson, a consultation was held

between the mentor and the teacher based on the observation form developed. The statistical method was involved in the research to cover more coverage of the teachers and to analyze the quantitative indicators of their performance. This method was used in the research of the results of the questionnaire survey of educators and comparing its different elements. In addition, the provisions of the State Educational Standard of School General Education of the Kyrgyz Republic (2014), Plan for continuous professional development for the 2022-2023 academic year of advanced training of teachers at the Republican Institute for Advanced Studies under the Ministry of Education and Science of the Kyrgyz Republic (2022) were used in the work.

Based on the results obtained from the questionnaire survey, the study developed a model of “Blended learning in the system of professional development,” In addition, its approbation was performed based on five modules, which were examined by 11901 teachers, out of which 11032 completed training according to the developed model of the blended form of professional development. It included the following components: “Using differentiated teaching in primary school,” “Content and language integrated teaching,” “Using children’s books in primary school,” “Writing process in primary school,” and “Everyday writing in primary school.” The training process under this model included offline training of national trainers (meetings with coaches), and online training on Moodle platform on five modules (mentioned above) of reading and writing for primary school teachers.

3. Results

The educational environment in the Kyrgyz Republic, as in other countries, has undergone significant changes due to the spread of the COVID-19 pandemic. The main innovation was the limitation of large crowds of people, and therefore, the shift of all spheres of life to a distance form. As a result, online learning was developed with features that differed from traditional education. They determined the necessity to introduce pedagogical innovations, to develop special professional competencies in teachers, and to increase their mobility. This approach was new for the majority of teachers in general education schools. Accordingly, there was a need to develop a pedagogical model of blended learning to adapt and retrain teachers to new educational conditions (Fleischmann, 2021; Gilmanshina et al., 2020).

Based on the above, necessary is to establish the content of the concept of “blended learning,” which provides for the integration of face-to-face and distance forms of education, with the overwhelming majority of the former. Analyzing this concept in the context of professional development, it should be defined as a combination of conventional lecture activities with remote ways of performing tasks in the course training. In addition, communication with trainees in the inter-course period is remote in this case. It can be established that blended learning implies the realization of lifelong learning. The last condition obliges teachers to implement the development of both personal and professional competencies considering the dynamic economic, social and professional circumstances. Based on this, blended learning allows ensuring the implementation of the system of professional development of education workers in different periods.

Blended learning is a pedagogical strategy that combines elements of traditional classroom instruction with the use of technology to deliver part of the learning process (Ivanenko & Nesen, 2023). In this approach, students are given the opportunity to acquire knowledge and skills both

in the classroom and through online resources, allowing educators to provide a more flexible and individualized approach to learning. The benefits of blended learning are that students have the ability to choose the time and place to study, making learning more suitable for their schedule and needs. Blended learning allows teachers to create individualized learning paths for students, taking into account their needs and level of knowledge. The use of technology can make learning more engaging and capture students' attention (Ronzhes, 2023). Students learn to manage their own learning and develop skills in finding and selecting information. The disadvantages of blended learning lie in the requirements for technological infrastructure. Successful implementation of blended learning requires access to computers and the Internet, which can be a challenge for some institutions and students. Teachers need to learn how to use new technologies and develop quality online content. Some students may lack motivation or accountability when studying in an unsupervised online environment.

Considering the epidemiological situation in Kyrgyzstan and worldwide, the educational environment has been converted to an online format using a Learning Management System (LMS) (Siripongdee et al., 2020). Its essence is to provide individuals (both teachers and students) with the ability to communicate and share information and materials (e.g., video lectures, instructional videos, test assignments). Moodle is a free LMS that allows ensuring the implementation of educational activities remotely. This approach to ensuring educational purposes presupposes the acquisition of new knowledge and skills (special professional competence) by teachers. Therefore, the factors were developed based on which it is possible to assess the level of skills and preparation of teaching staff for independent professional development using various online resources (see Table 1).

Table 1

Components and Indicators of Professional Competence of Primary School Teachers

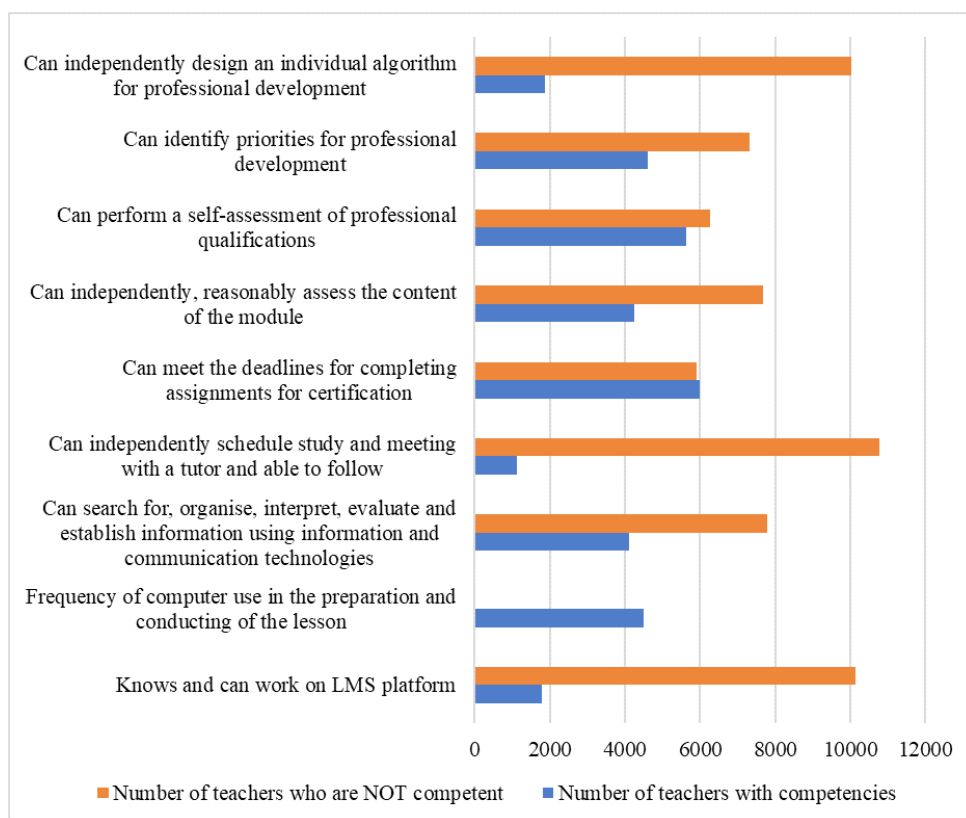
Components	Factors indicative of teacher's professional competence
IT competences	Can freely use the functions of the Moodle platform. Frequently uses a computer to prepare and implement a training lesson. Can independently conduct information transactions via the Internet and information and communication technologies.
Development of independent learning skills	Can independently develop and adhere to a schedule of training sessions, meetings with mentor. Able to complete assignments within the deadline for certification. Can objectively provide a critical evaluation of the content of the training module.
Development of individual educational trajectory	Capable of reflecting on professional qualifications. Can independently prioritize their own professional development pathway. Can develop an individual algorithm for professional development.

Source: compiled by the authors.

In the course of the research, a diagnostic assessment was conducted with 11901 primary school teachers in the Kyrgyz Republic, the results of which are presented in Figure 1.

Figure 1

Results of Diagnostic and Control Assessment of The Development of Professional Competence of Primary School Teachers



Source: compiled by the authors.

It was established that out of 4486 (37.7%) respondents who frequently used computers in developing and conducting lessons, only 4117 (37.6%) have the necessary skills to search for necessary information on the Internet and to develop teaching materials based on information and communication technologies. In terms of readiness, 10127 (85.09%) educators believed that they were not ready to learn through online platforms without prior training. In addition, during the diagnostic assessment, the level of teachers' autonomy formation as a professional competence was determined. Accordingly, 10770 (90.5%) out of 11901 respondents cannot form for themselves a schedule of training or meetings with a mentor. Out of the total number of teachers, only 1130 (9.5%) have developed skills of self-organization and planning. As for completing assignments

within the specified period and obtaining a certificate, 5998 (50.4%) respondents expressed their willingness. Low was the indicator of skills in assessing the content of the training module, which was 4236 (35.6%) educators. Separately, the assessment expressed the competence of teachers to establish an individual educational trajectory of their professional development, which included three components: (1) the ability to assess personal professional qualification, which was possessed by 5641 teachers (47.4%); (2) to determine for themselves the priorities of professional development 4593 (38.6%); and (3) only 1880 (15.8%) respondents have developed skills for their construction of professional development trajectory.

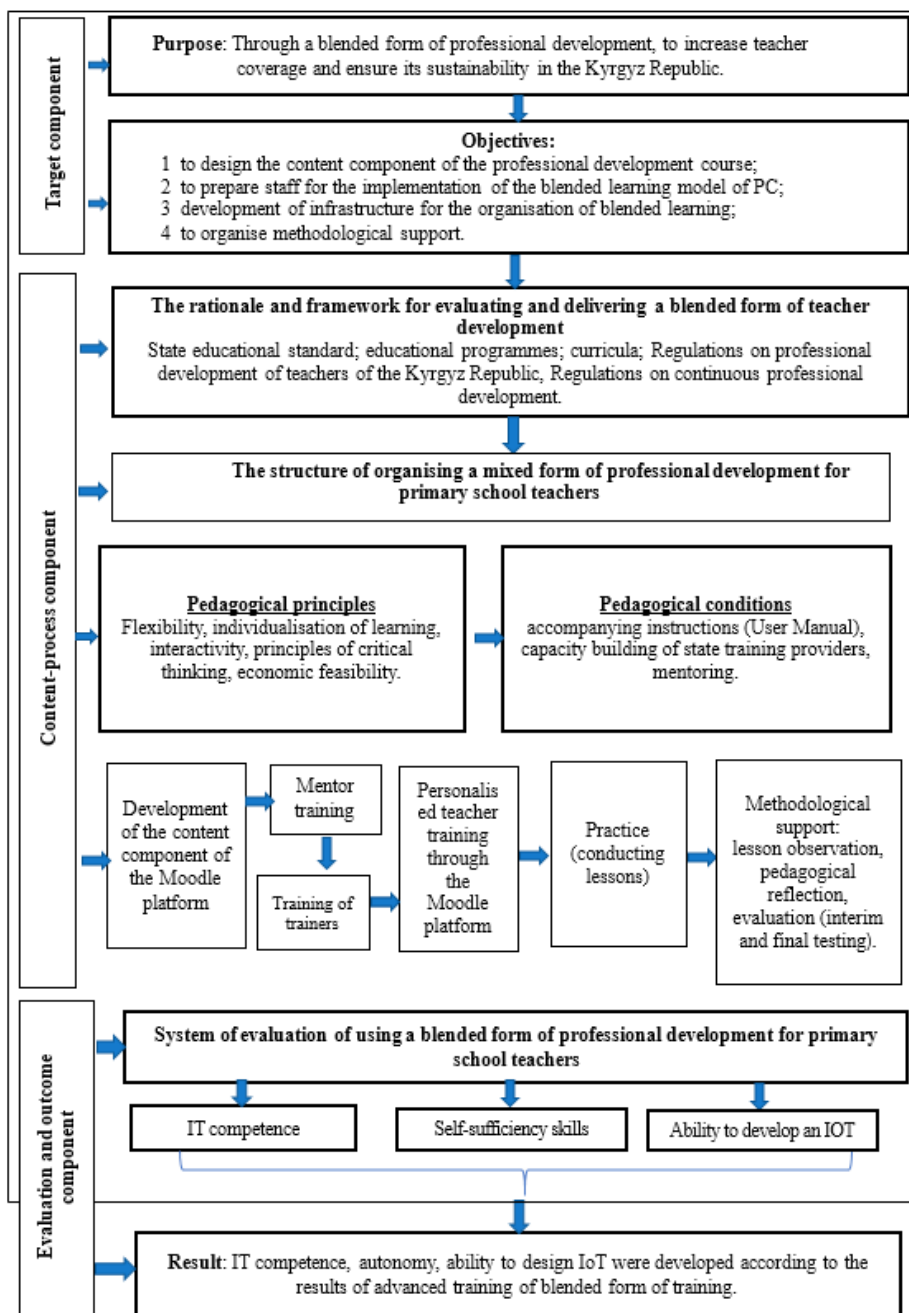
Based on the obtained data, it could be established that the involvement of teachers in the implementation of a mixed form of professional improvement implied the development of their IT-skills and personal skills of self-control. In addition, the following skills should be highly developed in educators: (a) to organize their activities based on online learning management platforms (for example, Moodle); (b) to activate the role of information and communication technologies in the development of innovative lessons; (c) time management; (d) self-reflection; and (e) to design an individual trajectory of professional development.

Blended learning offers several implications for the education system of the Kyrgyz Republic. One of its key benefits is increasing access to education, particularly for students in remote areas who can now study from the comfort of their homes. This approach also improves the quality of education by incorporating interactive exercises and online resources, making learning more engaging. Moreover, blended learning provides flexibility, enabling students to choose their own pace and location for studying. This flexibility, combined with the use of interactive online resources and multimedia, boosts student motivation and facilitates better comprehension of the material. In addition, teachers can more effectively monitor student progress and assess knowledge through online tools and tests, enhancing the overall educational process. Furthermore, blended learning can be cost-effective, as it reduces the need for extensive investments in physical classrooms and materials. In conclusion, blended learning has the potential to significantly benefit the education system in the Kyrgyz Republic by increasing accessibility, improving quality, enhancing flexibility and motivation, streamlining monitoring and assessment, and offering cost-effective solutions. However, ensuring that students have access to the necessary technology for online learning to fully harness these benefits is crucial.

Analyzing the results of the diagnostic assessment and the factors influencing teachers' readiness for a mixed form of professional development, a special pedagogical model was developed (see Figure 2). Its structure consists of three elements, namely the target, content-processual, and evaluation-result. As for the first one, it includes the formulation of the purpose and vectors of approbation of the blended learning model in the process of professional development. The content-processual component describes the features of methodological support, and the implementation of pedagogical principles (e.g., observation of the learning process). The last, evaluative-effective element of blended learning involves ensuring pedagogical reflection, and comparative analysis, in particular, diagnostic and control testing of educators.

Figure 2

Author's Pedagogical Model of Blended Learning in The System of Professional Development



Source: compiled by the authors.

In the Kyrgyz Republic, there is the State Educational Standard of School General Education of the Kyrgyz Republic (2014), which enshrines three stages of professional development of a teacher, namely the reproductive, productive and creative. Significantly, according to this document, the main groups of principles are: (a) general (humanization of education, scientific, developmental, systemic); (b) those based on the purpose and content of education; and (c) principles covering learning and teaching activities. Within the framework of this research, such foundations of the organization of the blended learning model in the system of professional development as flexibility, individualization of learning, interactivity, critical thinking, and economic efficiency were identified. The first involves the organization of expanded access to education based on information and communication technologies. The second involves the development of an individual educational trajectory using the digital skills of a teacher. The interactivity of this process is characterised by the involvement of such an educational platform as Moodle, which allows ensuring communication between subjects and their performance of exercises and objectives. Critical thinking is necessary in the context of developing content and materials for training courses. As for the principle of cost-effectiveness, its essence is disclosed in the state requirements for the competence of teachers. In particular, according to the Plan for continuous professional development for the 2022-2023 academic year of advanced training of teachers at the Republican Institute for Advanced Studies under the Ministry of Education and Science of the Kyrgyz Republic (2022), 20% of education personnel should undergo annual professional development and retraining. Considering that there are 81000 public school teachers in Kyrgyzstan, the coverage of all staff assumes that they will undergo professional development courses within 5 years (Bukabaeva & Kaldybaeva, 2021; Nestulya & Shara, 2023). In turn, the blended learning model for professional development can speed up the process and be 50% cheaper than conventional approaches (based on economies of scale).

The proposed model was piloted using a cascade approach that involved the training of master trainers. Before the blended modality, the professional development of primary school teachers was provided with printed versions of five training modules. There were 11901 primary school teachers that registered their accounts in Moodle and were divided into 325 training groups. The training process included: videoconferencing (4 for each module) and organization of meetings (e.g., national coach-mentor with trainees). Notably, each educational module was combined with video lessons that revealed how teachers could implement the concept in their educational institutions. The training materials provided to the teachers were consistent, as after the lecture information they were asked to take an interim test on each subject. At the final stage, a final test was designed to determine the level of skills acquired by the trainee teachers during the training.

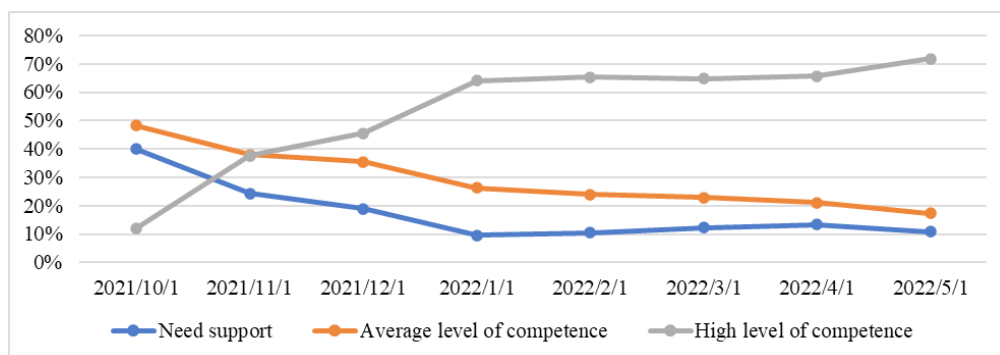
During professional development, each teacher was provided with mentoring support from the national trainer, who analyzed their progress and activity. In addition, the national trainer personally visited the lessons conducted by the teachers 4-5 times to provide them with feedback on the lesson, feedback and recommendations. Teachers' activities were largely self-directed, as they spent the week between online video conferences to further research the module materials and complete assignments. Discussion and reflection were implemented together with the mentor within the framework of training sessions. The analysis of the issues disclosed during such activities allowed establishing that most often they were of theoretical and practical nature. For example, they were concerned about the explanation of the essence of understanding integration,

differentiation, universal design for learning, zone of proximal development, and scaffolding.

The stages of the trainee teacher evaluation should be noted separately. In the initial period, the national trainers used a trial version of SabakApp to allow them to familiarize themselves with the algorithms in this digital application. Based on this, there was no evaluation at this stage. In the subsequent period, namely from the second quarter in 1987, reading lesson observation systems were organized. Based on these, it was found that the activities of primary teachers who participated in the training sessions and used coaching support were characterized by a high level of competence in teaching reading. Accordingly, the proportion of those who needed the support of a mentor coach after retraining decreased from 39.9% to 10.9%. In addition, the rate of elementary teachers with low levels of competence decreased, which was 21% after the training. Based on the results of the teachers' training, the main benefits of participating in trainings, learning materials, and using mentoring support were identified. Figure 3 demonstrates a dramatic increase in the number of teachers in the first 3 months, respectively making a difference of 52.1%. In the next stage of the research, namely in the second half of the year, this indicator of advanced-level teachers did not increase comparatively much (on average 1.65% for each month). Based on the disclosed trend, it could be established that in the first half of the year, there was a dynamic use by teachers of all the resources provided to them, which contributed to the design of the necessary level of skills, which was further accompanied by the development of professional competences.

Figure 3

Levels of Professional Competence Development Based on Lesson Observation Results



Source: compiled by the authors.

At the formative stage in the control phase, the survey was again conducted among 11032 primary school teachers. Notably, the number of respondents decreased as 869 (7.3%) dropped out of the process for subjective reasons (e.g., refusal due to employment or health status). The obtained results demonstrated that there was a development in all three components of the development of professional competence formation. Especially significant was the increase in the indicator of skills to use LMS platforms, as it was 1774 (14.91%) teachers before the training and 7953 (72.3%) after. In addition, the indicator of autonomy increased from 9.5% to 89.5%

(1130 and 9845, respectively), characterized by the skills to make a personal learning schedule. In turn, the dynamics of development of the ability to independently develop an individual educational trajectory was not so successful, as it increased only from 1880 (15.8%) to 3421 (31.1%). The features of the development of IT competence formation among teachers should be separately noted. They increased from 4486 (37.7%) to 5038 (45.8%) in the context of the number of persons who frequently use a computer in preparing and conducting lessons. Then, the indicator of the number of primary school teachers able to search, organize, interpret, evaluate and establish information using information and communication technologies before the training was 4117 (34.6%), and after 5984 (54.4%).

Based on the study's findings, crucial to highlight that during the implementation of the blended professional development program for teachers as outlined in the research, the preparation of training modules for participants beforehand proved to be highly beneficial. This proactive approach significantly mitigated the challenges teachers might face in acquiring computer skills and conducting Internet-based research activities. Consequently, the developed pedagogical methodology had a demonstrably positive influence on enhancing the IT competency levels of primary school educators in the Kyrgyz Republic. This not only contributed to their individual professional growth but also held the potential for enhancing the overall quality of education in the region, aligning it with the demands of the modern digital era.

4. Discussion

The relevance of the issue of blended learning has led to the emergence of a large number of scientific works in pedagogical doctrine, which dealt with its various aspects. Among them, researchers have identified the features of teacher professional development, based on this approach. For example, Krismadinata et al. (2020) and Cronje (2020) disclosed the foundations and essence of "blended learning." Krismadinata et al. (2020) and Khrystych (2023) analyzed it by considering two forms of learning such as blended and web-based learning. By combining their main attributes, they found that the blended learning process involved posting learning materials, working through them, and sharing completed tasks and announcements online. However, the researchers additionally indicated that blended learning must necessarily contain traditional classroom instruction. Combining the above principles allowed them to conclude that it was not appropriate to identify blended learning with distance and hybrid learning. They found that this form of education was appropriate not only during quarantine but in general in the modern educational environment influenced by digitalization. In turn, Cronje (2020) argued that blended learning consisted of elements of hybrid and distance learning. Thus, this position was different from the one disclosed above, as the idea proposed to use the attributes of both forms in the course of expressing the essence of blended learning. The researcher indicated that during this form of education, conventional classroom activities should account for 80% of the students' activities. As for teachers, Cronje believed that they should take advantage of distance learning in the process of presenting the theoretical block, and preparing information and tasks. The disclosed positions vary significantly from each other, but both have common features with the results of the research. In particular, the notion of blended learning developed within this research partly includes the principles that the researchers disclosed above. In particular, the idea of using blended approach and online learning skills both during learning activities in mobile applications

and in classrooms (while working with digital materials) is the same.

Lane et al. (2021) and Park and Shea (2020) focused their work on the history of the design and development of blended learning. Park and Shea (2020) were able to establish that this form of education existed back in the 1990s and accordingly, was used by universities in the course of organizing educational work. However, they noted that this approach was not particularly relevant at that time, as the development of the Internet and the skills of its use in society were not at a high level. According to the researchers, this situation changed significantly at the end of 2005, due to the emergence of approaches in the pedagogical scientific doctrine, which began to actively reveal the essence, advantages, features and tools for the implementation of blended learning. As a result, the number of educational institutions that started testing blended learning increased significantly, in particular, universities in the US, China, and Japan appeared, which allowed students to acquire knowledge using digital technologies and the Internet. Based on this, the researchers proposed in their work a definition of blended learning as an educational technology that provided access to Internet-based learning activities for all educational actors. Therewith, Lane et al. (2021) and Panchenko (2023) noted that this form of learning was the seamless integration of online and offline methods of presenting and receiving material. Exploring the current state of the educational environment, they found that blended learning was broader than the framework of educational courses, as it included both formal and informal learning tools. Based on the position disclosed and the conclusions reached by the researchers, it indicated that they were intertwined with the results of this work. General approaches to the definition of the concept of “blended learning,” which encompasses the possession of educational actors to use the Internet in the context of learning activities. Regarding the combination of formal and non-formal education, this idea was encountered in this work when proving the need for continuous professional development of teachers.

Bao (2023) and Suchyadi et al. (2020) indicated the need to promote the educational process using professional development courses for pedagogical staff. They believed that in the context of blended and distance learning, the modern educator must constantly update the amount of knowledge and skills possesses and uses in the course of fulfilling authority. In the research, they drew attention to the role of multimedia presentations, which in their opinion, were most appropriately used in the training of primary school teachers. The researchers stated that this learner in face-to-face training sessions was more necessary to provide local functions (e.g., organizational, diagnostic, illustrative). However, in the context of blended learning, it is transformed into a means of providing teachers with relevant, interesting, and important information. The authors believed that its advantage is the original artistic and technical digital design, which improved the effectiveness of retraining of educators. In addition, they noted the possibility of using verbal and graphical methods in the process of communication between course participants and their tutors. The results obtained have common features with the findings of this research, as they disclosed ways to increase the motivation of teacher trainees to independently work through the training material, and the researchers’ approbation in the course of their professional activities. The researcher’s ideas about the variability of types of learning activities coincided with the position in this research on the differentiation of professional development courses for educators (Kazanbayeva, 2020; Khaletska, 2023; Kroliets, 2023).

Xaydarova (2022) indicated the priority of modernizing approaches to the organization

of scientific and methodological work with teachers. In the author's opinion, the development of postgraduate education is innovative, which makes it necessary to expand the scope of professional competence of educational workers. Xaydarova believed that this was conditioned upon the spread of digital technologies, changes in society and the volume of skills among students in the possession of the Internet. Considering this, the organization of blended learning implies the development of the necessary level of training for all educational actors. Xaydarova indicated that the modernization of scientific and methodological work with teachers would increase its dynamism, flexibility, and mobility, which were important components in a constantly changing social environment. Xaydarova argued that teachers' professional development should be characterized by variability in the content, forms, and methods of their work and interaction with mentors. In addition, Xaydarova noted the significance of the person-centred development of a teacher, who should possess a wide range of personal qualities for effective performance of their duties. Xaydarova believed that the transformation of scientific ideas directly into pedagogical practice consisted of the implementation of qualitative interaction of various scientific departments, offices, and scientific laboratories based at the institutes of postgraduate teacher education. Thus, there is the development of a unified methodological space that provides for the implementation of the concept and innovative models for improving the professional competence of primary school teachers. Such a conclusion is consistent with the results of this research, which noted the dynamism of the educational environment and the expansion of teachers' responsibilities and authority in it. Considering this, the general idea of engaging scientific innovation cells in the context of developing models of teachers' professional development exists. It is the approach used in the framework of research and design of blended learning technology in the framework of pedagogical professional development.

Based on the above, it should be established that, despite the differences in the approaches of scholars, they all adhere to the same idea: namely the improvement of the competence of educators. This unity is due to the current societal and educational environment, which is developing based on digital technologies and envisages their use in various sectors. Therefore, blended learning can be an effective framework for the implementation of the process of improving the professional competence of primary school teachers and their retraining.

5. Conclusions

Based on the conducted research, it should be established that the dynamic change in the conditions of the educational environment implies the need for professional development of primary school teachers in the Kyrgyz Republic. Based on the theoretical foundations of blended learning in the context of improving the skills of educators, the research developed a model of blended learning in the system of teacher professional development. To explore its practical value, its approbation was implemented. Based on the results obtained, it should be established that for the Kyrgyz Republic, the blended form of education had more advantages. This conclusion was obtained based on the data on the cost-effectiveness of this approach, due to greater coverage of teachers and lower costs of professional development.

By using technical and transport means, and a unified presentation of necessary information, teachers started to demonstrate higher indicators of the effectiveness of their work. Particularly,

the work noted the impact of the retraining process on the development of teaching skills in reading and writing, which were fundamental for an educational specialist in the primary grades. In addition, the results obtained from the lesson observation were tested for different types of learning activities. It proved that the approach developed in the research had a positive impact on the activity of achieving the purposes of the educational subjects. In the course of approbation of the developed model, teachers had the opportunity to independently determine the content of the teaching material and to develop their professional strategy.

The research conducted a comprehensive large-scale blended professional development program in the Kyrgyz Republic, involving a substantial cohort of 11901 teachers. The primary objective was to equip educators with the necessary skills and resources to effectively utilize innovative blended learning tools. Through the implementation of this program, it became evident that continuous professional development has evolved into a contemporary imperative for educators, given the ever-evolving educational landscape.

Furthermore, future research should explore the particular nuances and opportunities associated with integrating artificial intelligence (AI) into the teacher professional development process within the Kyrgyz Republic. AI has the potential to revolutionize education by personalizing learning experiences, automating administrative tasks, and providing valuable insights into student performance. By investigating the role of AI in teacher training, it can be determined how these technologies can be harnessed to further enhance the quality of education in the country, keeping pace with global advancements in the field. This will not only benefit educators but also contribute to the overall educational progress and competitiveness of the Kyrgyz Republic on the international stage.

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