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DEVELOPMENT OF PROFESSIONAL COMPETENCIES OF TEACHERS TO MANAGE THE INNOVATION ENVIRONMENT

Annotation. *This article considers especially the development of teachers' professional competencies needed to manage the innovation environment. The study was carried out in order to develop the main directions of teachers' professional competencies development, which can provide effective management of innovation environment in secondary educational institutions. The main provisions and aspects of formation of teachers' knowledge and skills necessary for the management of innovation knowledge and skills are considered. The level and perception of problems and importance of professional competencies among school teachers, which they need to improve innovation management, were evaluated. Their results showed: that school teachers feel the need to develop a number of key competencies for mastering modern technologies and using innovative teaching methods, as well as note the need for additional training and professional development for effective management of the innovation process. These indicators are confirmed by the opinions of school administrations, parents of pupils, high school students and IT specialists. Lack of equipment, lack of time and low technical support were identified as the main barriers to successful management of the innovation environment. A comprehensive system for the development of teachers' professional competencies focused on innovation management has been developed. Its implementation should allow teachers to more effectively implement innovative teaching methods and manage changes in school educational processes.*

Keywords: *professional competencies, educators, teachers, innovation management, school administration, parents, high school students.*

Introduction

The relevance of the study of professional competencies of teachers for management in an innovative environment is due to significant changes in the educational system, caused by the rapid development of various modern technologies and the transformation of requirements for other qualifications of teaching staff, especially at the level of secondary education. It is conditioned by the fact that a modern school must meet the challenges of modern times in order to provide training of such graduates who will be able to adapt to

the constantly changing conditions of life and future work. All these conditions require secondary school teachers to constantly develop their professional competencies in order to be always ready and able to implement new teaching methods based on innovative approaches in their work.

One of the key problems that need to be addressed is the insufficient level of teachers' readiness to manage innovation processes that are increasingly being introduced in educational institutions (schools). In the process of modernization of the education system, which is still ongoing in the Republic of Kazakhstan, school teachers need to possess both traditional skills in the field of teaching and be able to create and maintain in educational institutions a comfortable environment for the introduction of innovative technologies and methods. However, in practice, the existing system of developing teachers' professional competencies often fails to take these needs into account. While the solution of the problem in the context of the development of teachers' professional competencies for managing the innovation environment is extremely important in modern conditions. This is due to the fact that it is teacher educators who play a major role in shaping the level of knowledge and skills of future generations who will be able to be successful in today's rapidly changing world.

The aim is to develop the main directions of the development of professional competencies of teachers capable of ensuring effective management of the innovation environment in secondary educational institutions.

Objectives of the study:

– to consider the main provisions and aspects of formation of teachers' knowledge and skills necessary for the management of innovative knowledge and skills;

– To assess the level and perception of the challenges and importance of professional competencies among school educators that they need to improve innovation management

– to develop a comprehensive system for the development of teachers' professional competencies focused on innovation management.

Scientific novelty of the work consists in the development of a comprehensive system for the development of professional competencies of teachers to manage innovations in the process of school education. Unlike existing approaches, this model will take into account the specifics of Kazakhstani education and the peculiarities of professional activity of a modern teacher.

The object of the study is professional competencies necessary for teachers to effectively manage an innovative educational environment.

The subject of the study is the processes of formation and development of professional competencies in the context of modern innovative education system.

The degree of development of the problem is characterized by the presence of a number of studies that are directly or indirectly devoted to the problems of teachers'

professional development and innovation management in the education system. At the same time, it is important to note that most of the works focus on individual issues.

The study is based on the works of leading Kazakhstani and foreign scientists. In Kazakhstan, the problem under study is disclosed by G.K. Tleuzhanova [1], L.A. Anarbek, G.M. Sarsenbaeva, G.B. Isaeva. [2], R. Kalimzhanov, A. Ismagulova, G. Rakishev [3], E. Vasiliev, B. Abykanov, G. Myrzagereykyzy [4], D.M. Mukhiyaeva, T.Sh. Shayakhmetova, J.S. Utegenova [5] and others. It is also necessary to note the works of foreign scientists such as G. Sherly [6], S. Rahmah [7], D. Namsone [8], A. Qodir [9], N. Hamid Ali [10], V. Ho, V. Tran, V. Nguyen, [11], C. Marisa [12] and others. These works laid the foundation for understanding the mechanisms of innovation environment management and the role of teachers' professional competencies in this process.

Literary and analytical analysis, survey and comparison methods and modeling will serve as the methodological basis of the study. Their integrated use is aimed at a comprehensive study of the existing problems, and to develop effective recommendations to address the issues raised.

Theoretical and practical significance of the study consists in the possibility of using the developed measures to improve the quality of teachers' professional competence development and to improve the processes of innovation environment management in educational institutions. The results of the study can also be used in the professional development of teachers and implementation of innovation environment management in secondary educational institutions.

Materials and methods

The research materials chosen are scientific (monographs, scientific articles and other forms of scientific research), legislative, regulatory and methodological works. All materials relate to the topic of the study and the problem considered in it.

The following research methods were used to achieve the set goal and solve the research tasks related to the development of the main directions of the development of professional competencies of teachers for the management of innovative environment in secondary educational institutions.

Theoretical analysis of literature to study and systematize scientific legislative, regulatory and methodological sources that describe the issues of innovation environment management, development of professional competencies of school teachers. This analysis is aimed at establishing existing concepts, trends and best practices, in the researched area, as well as to identify contradictions subject to further and more detailed consideration. The obtained materials allow to help understand what strategies and methods of innovation management are more effective at a higher level of development of professional competencies of teachers.

Survey methods, through questionnaires among school teachers are aimed at collecting primary information about the current state of their professional competencies, about the perception of the importance of their professional competencies, which they need to improve the management of innovations in the educational institution. 80 teachers of secondary schools in Pavlodar city were surveyed.

Interview method in the form of several focus groups. It is conducted among administration (12 people), parents (12 people), high school students (12 people) and IT specialists in the field of school education (12 people). This approach provides an opportunity to gain a deeper understanding of the opinions and views of the most important participants of the school education process regarding the issues of managing the innovation environment and developing professional competencies among teachers. All focus group participants were asked general and special questions.

The observation method is used to monitor the work of teacher educators in real-life conditions. Since only in this way it is possible to see and evaluate their current professional competencies in the management of innovative educational environment, as well as to establish more complex situations that they face in the process of teaching. In the course of the study, the work of 24 teachers of schools in Pavlodar city was observed. The main objective was to assess the current professional competencies of teachers, as well as to identify specific situations in which they face difficulties in managing the innovative environment. The observation was conducted during one school week, covering various lessons and extracurricular activities.

Methods of statistical analysis are used for statistical processing of the obtained quantitative data. Methods of analytical analysis are aimed at generalizing the results and formulating conclusions on the obtained results

Modeling methods are aimed at developing recommendations in terms of modeling the processes of innovation environment management and the development of professional competencies of teachers, in the form of visual schemes and algorithms of actions that can be applied in real educational practice and predict possible results.

Results and discussion

The main provisions in the context of developing professional competencies of teachers. Professional competences of school teachers are considered to be: general pedagogical competence; subject pedagogical competence (knowledge of the subject and its teaching methodology) professional-communication skills; managerial competence; competence in the sphere of innovation activity; reflexive competence [13].

Aspects of the formation of teachers' competencies necessary for the management of innovative knowledge and skills are laid down in legislative and methodological sources. Thus, the Professional Standard «Teacher» of the Republic of Kazakhstan (2022) defines the importance of professional development of teachers and educators, expressed in the

management of their own professional growth through the development of the required competencies needed to ensure effective pedagogical activity [14].

It is necessary to single out information and communication competencies, which include skills in information and communication and Internet technologies [15, 16]. In this case, we can refer to the opinion of a group of Kazakhstani authors who note that it is necessary to characterize innovative pedagogical management complex system, which includes principles, methods, forms of organization and technological techniques used in the management of pedagogical process. Only this approach can allow a modern school to move to a horizontal system of management organization in the form of such cooperation as (subject-subject), as it allows to ensure, first of all, the creative development of the personality of the teacher-teacher and then of his pupils [2, p. 223]. Besides, teachers' innovative activity is subject to continuous development, taking into account the processes of innovation, which are noted in the secondary compulsory educational process, according to the requirements of the State Educational Standards of the Republic of Kazakhstan [3, p. 129].

To the professional competencies of school teachers, necessary for the management of innovative knowledge and skills, many authors refer: mastery of modern technologies [17]; readiness for training and professional development [18]; ability to adapt educational programs to innovative conditions [19]; time and resource management; communication skills; professional self-awareness and reflective behavior; methodological competence; psychological stability [20]; the use of innovative teaching methods and their integration.

The results of the questionnaire survey on the questions of the general part. Most of the surveyed teachers (40%) have significant work experience exceeding 10 years, from 5–10 years of experience have 36%. This indicates that experienced specialists prevail in the team. Nevertheless, a significant share of teachers (24%) have experience from 1 to 5 years, which indicates the presence of young staff ready for professional growth and development. The absolute majority of teachers (81%) have higher education, and (10% of them) are masters or specialists in the field of pedagogy and informatics. 19% have specialized secondary education. This level of specialized professional training of the teaching staff indicates potential opportunities for the introduction of innovative methods in the field of learning management.

Table 1 shows the results of answers to the questions after statistical processing (in percent of the total number of respondents).

As a result of analyzing the data obtained, the following conclusions can be drawn.

The majority of teachers assess their skills in working with modern technologies as satisfactory (55%), however, a significant number of teachers consider them good (32%) and low – 13%. This indicates that they have an average level of readiness to use technologies in the teaching process.

Table 1 – Results of the questionnaire survey of school teachers, in percentages

Questions	Answers			
Evaluate your level of proficiency in modern technologies in the educational process	good	satisfactory	low	
	32	55	13	
How often do you use innovative teaching methods in your work?	regularly	periodically	never	
	49	45	6	
What challenges do you face in implementing innovations in the classroom?	Lack of necessary equipment	Lack of time	Low level of technical support	Insufficient knowledge and skills
	45	51	49	71
What aspect of your professional competencies would you like to improve first?	Mastery of modern technologies	Use of innovative teaching methods	Time and resource management	Communication with colleagues and students
	71	75	87	53
Need additional training or professional development to successfully manage innovation?	Yeah, I'm in dire need	More like yes than no	No, my knowledge is sufficient	
	53	22	25	
How important are professional competencies for successful management of the innovation environment in the school?	Very important	Medium level of importance	Not important	
	45	45	10	
What, most of all, hinders the development of professional competencies among educators?	Lack of motivation	Limited access to resources	Lack of management support	
	37	38	25	
To what extent does your work influence the success of innovation implementation in your educational institution?	Significant impact	Moderate impact	None	
	37	53	10	
What measures could help improve the management of the innovation environment in your school?	Professional development of teachers	Improvement of material and technical base	Improvement of methodological support	Organization of support for pedagogical creativity
	71	53	37	45
Do you have any suggestions for improving the current system of developing teachers' professional competencies?	Yes, there are concrete ideas	There are general suggestions	No	
	21	48	31	
Would you like to participate in further research or discussion about managing the innovation environment in your school?	Yes, I'm willing to participate actively	Perhaps, given free time	No, I don't see the need	
	43	31	26	

The main difficulties in implementing innovations among teachers are lack of knowledge and skills (71%) and lack of necessary equipment (45%). Lack of time (51%) and low level of technical support (49%) are also considered significant negative factors.

Teachers consider time and resource management (87%), use of innovative teaching methods (75%), and mastery of current technology (71%) to be most important for improvement. Less of a priority, in their opinion, are considered innovative communications with colleagues and students (more than half or 53%).

More than half of the teachers surveyed need additional training or professional development to successfully manage innovation (53% and 22%), and only a quarter (25%) have no such need.

The vast majority of teachers realize the importance of professional competencies for successful implementation of innovations in the educational environment (90%: 45% and 45%).

Limited access to resources (38%) and lack of motivation (37%) were identified as the main obstacles to the development of professional competencies by teachers. Lack of support from the management is also an obstacle, but only for 25%.

Slightly more than half of teacher educators believe that their activities have a moderate influence on the successful implementation of innovations (53%), with a not insignificant proportion of teachers marking their influence as significant (37%) and only 10% believing they have no influence.

The main suggestions for improving the management of the innovation environment are: improving the qualifications of teachers (71%), improving the material and technical base (53%) and organizing support for pedagogical creativity (45%).

More than a half of teachers expressed full or possible readiness to participate in further discussions and research related to innovation environment management (43% are ready to actively participate, 31% will probably participate). While 26% of teachers are not ready to participate.

The results of the survey make it possible to identify the key areas that are the most significant for educators in scientific and theoretical terms:

Recognition of the importance of professional competencies, as the majority of teachers realize the significance of their professional competencies for successful management of the innovation environment.

Prioritization of certain competencies is that the findings indicate that educators highlight time and resource management as the most important aspect to improve their professional competencies. This indicates the need for further research aimed at optimizing time resources and rational allocation of material and human resources in educational institutions.

The results of the survey for the two general questions, in the scope of the four focus groups, are reflected in Table 2.

Table 2 – Results of the opinion interviews of the four focus groups on two common questions

Questions	Answers			
How do you assess the current level of professional competencies of teachers in the field of innovation environment management?	High	Medium	Low	
School administration	33	50	27	
Parents	0	58	42	
High school students	8	67	25	
IT specialists	17	58	25	
What aspects of teachers' professional competencies need to be improved to better manage the innovation environment	Mastery of modern technologies	Use of innovative teaching methods	Time and resource management	Communication with colleagues/ parents/students
School administration	67	67	50	33
Parents	75	58	50	52
High school students	97	90	72	30
IT specialists	100	83	50	17

To illustrate the results of the focus groups' opinions regarding the assessment of the current level of professional competencies of teachers in the field of innovation environment management, we will show them in Figure 1.

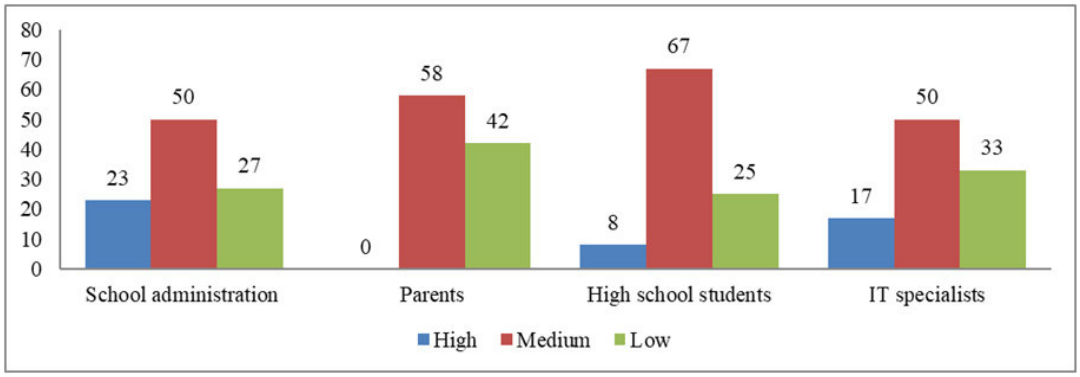

Figure 1 – Assessment of the current level of professional competencies of teachers in the field of innovation environment management

Assessment of the current level of teachers' professional competencies has shown the following. School administrators give a higher assessment of competence level to 23% of teachers, some and IT specialists also assess a high level of competence in some teachers (17%). Half of teachers assess the level as average, while 27% and 33% of teachers assess the level as low, respectively. At the same time, parents and senior school pupils more often assess the level of teachers' competencies lower, especially parents who did not mark high level at all. Let us compare them with the indicators given by teachers: the majority of teachers assess their skills in working with modern technologies as satisfactory (55%) or average level, good (32%) or high level, and low – 13% or low level. This indicates that their assessment is generally similar to the administration's opinion.

Figure 2 reflects the results of the focus groups' opinions on aspects of educators' professional competencies that need to be improved for more effective innovation management.

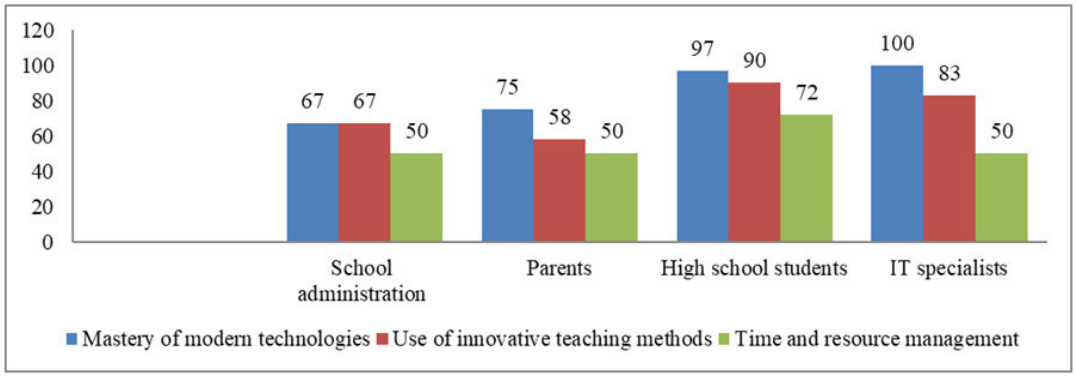

Figure 2 – Aspects of educators' professional competencies
that need improvement to better manage innovation.

It is clearly seen that all groups emphasize the importance of mastering modern technologies and using innovative teaching methods for more effective management of the innovation environment. This opinion is especially strong among high school students (97%) and IT specialists (100%).

Time and resource management is also considered an important aspect that needs improvement, especially among high school students (72%). In other groups, this aspect was mentioned by half of parents, administrators and IT specialists (50% each).

Communication with colleagues, parents and students is considered less critical for improvement, except for the opinion of parents who see this area as important for improving teachers' professional competencies.

Comparison with the results of the educator survey showed that teachers consider time and resource management most important for improvement, with the use of innovative teaching methods and mastery of modern technology ranking second and third, and innovative communication with colleagues and students considered a lower priority.

The survey of focus group opinions revealed the key areas for improving teachers' professional competencies: mastery of modern technologies, application of innovative teaching methods, and effective time and resource management.

The results of the focus groups' opinions on specific issues are reflected in Table 3.

Table 3 – Results of interviews on specific questions received from school administration, parents of pupils, high school students and IT specialists

Questions	Answers			
School administration				
What steps does the administration take to support teachers in developing their competencies in managing the innovation environment?	Conducting seminars and trainings:	Ensuring access to modern technologies	Introduction of mentoring programs	Support in the development of innovative projects
	42	50	25	0
What resources and conditions are necessary to create a favorable environment for the development of teachers' professional competencies?	Modern technologies and equipment	Additional funding	Experience exchange programs	Increased hours for self-development
	100	75	50	33
Parents of students				
How do you think the development of teachers' professional competencies will affect the quality of your children's education?	Positive	Neutral	Negative	
	92	8	0	
Are you willing to engage in collaborative activities with educators to support their development in managing an innovative environment?	Yes, we are ready to actively participate	Perhaps, given free time	No, not interested	
	42	58	8	
High school students				
How changing the professional competencies of your teachers might affect your learning and motivation	Positive	Neutral	Negative	
	67	33	0	
What innovative teaching methods would you like to see more often in the school program?	Project activities	Online courses and webinars	Group work and cooperation	Game elements
	50	75	42	58

Continuation of table 3

Questions	Answers			
IT specialists				
What technology tools and platforms can help educators develop their competencies in managing innovation environments?	Interactive panels	Cloud services	Co-operative education programs	Artificial intelligence
	100	75	50	25
What technical barriers prevent educators from effectively developing their competencies in this area?	Insufficient budget for IT infrastructure	Slow response to tech support requests	Limited accessibility to specialized platforms	Equipment malfunctions
	100	75	50	33

The results obtained allow us to draw the following conclusions about the interview

School administration believes that the school actively supports teachers through seminars and trainings, access to modern technologies and introduction of mentoring programs. However, insufficient attention to the support of innovative projects development is noted (0%). In their opinion, in order to create a favorable environment for the development of professional competencies of teachers, modern technologies and equipment (100%), additional funding (75%) and experience exchange programs (50%) are required. The importance of increasing the hours for self-development is also noted (33%).

According to the opinion of pupils' parents, the development of teachers' professional competencies will positively affect the quality of their children's education (92%); the neutral opinion is insignificant – only 8%, and there are no negative ones. The majority of parents are ready to participate in joint activities with teachers to support their development in managing the innovative environment. Moreover, 42% – actively, 58% – if they have time, and only 8% have no desire.

High school students in the majority believe that changes in teachers' professional competencies will have a positive impact on their learning and motivation (67%). Neutral answers account for a little more than a third (33%), and there are no negative opinions. Students express a desire to use project activities (50%), online courses and webinars (75%), group work and collaboration (42%) and game elements (58%) more often in the curriculum.

IT specialists name interactive dashboards (100%), cloud services (75%), collaborative learning programs (50%) and artificial intelligence (25%) as the most useful tools for teachers to manage the innovation environment. The main problems are IT infrastructure funding (100%), slow response to support requests (75%), limited availability of specialized platforms (50%) and hardware failures (33%).

Thus, all participants of the process (school administration, parents, students and IT specialists) see the necessity and importance of developing professional competencies of teachers to improve the quality of education. At the same time, they point to the lack of resources, such as modern equipment, funding and technical support, which is the main obstacle to effective implementation of innovations.

The results of the observation of teachers' work are shown in Table 4.

Table 4 – Teacher observation results (percentage)

Indicators	Results			
	Well-developed	Needs improvement	Virtually unused	
1. Mastery of modern technologies	50	33	17	
2. Use of innovative teaching methods	67	25	8	
3. Difficulties in implementing innovations:	Lack of necessary equipment	Not enough time	Low level of technical support	Insufficient knowledge and skills
	75	58	8	33
4. Desired areas for competency improvement:	Insufficient knowledge and skills	Insufficient knowledge and skills	Time and resource management	Communication with colleagues and students
	79	88	71	63

Obtained surveillance results.

1. Mastery of modern technologies: 12 teachers (or 50%) are well developed, as they confidently use interactive whiteboards, online platforms and other digital tools in their daily teaching practice. These teachers demonstrate a high level of proficiency with these technologies and are able to promptly address emerging technical issues regarding innovation management. Needs improvement 8 educators (or 33%) as they experience some difficulties in using modern technologies. They often seek help from technicians or colleagues, especially when unforeseen technical glitches occur. 4 teachers (or 17%) practically do not use innovations in their work. They prefer traditional teaching methods and explain it by the lack of necessity or difficulty in mastering new tools.

2. Use of innovative teaching methods. 16 teachers (or 67%) regularly use innovative teaching methods, such as project activities, cooperative learning and game forms. These teachers note that such methods increase students' motivation and improve learning. Six teachers (or 25%) sometimes use innovative methods. Lack of time and resources explains their irregular use.

Rare use is noted by 2 teachers (or 8%), as they still prefer to use time-tested classical educational approaches.

3. Difficulties in implementing innovations: 18 teachers (or 75%) pointed to the lack of modern equipment as the main reason for difficulties in implementing innovations. At the same time, they emphasize that the lack of interactive whiteboards, computers and other equipment significantly limits the possibilities of using modern technologies. 14 teachers (or 58%) complain about the lack of time to prepare lessons using innovative methods. These teachers note that it takes a lot of time to develop new teaching materials and adapt old ones to modern requirements. 10 teachers (or 42%) faced problems due to insufficient technical support. According to them, assistance from IT-specialists comes slowly or is absent at all, which creates additional difficulties in implementing innovations. 8 teachers (33%) admit that they themselves are not competent enough in the use of modern technologies and innovative methods. They believe that they need to undergo additional training or improve their qualification.

4. Desired areas for competency improvement. 19 teachers (or 79%) expressed a desire to improve their skills in the use of modern technologies. All these teachers are interested in taking courses and trainings aimed at mastering new digital tools. 21 teachers (or 88%) want to learn how to use innovative teaching methods more effectively. These teachers are looking for ways to integrate innovative methods into daily practice without compromising the quality of traditional instruction. 17 educators (or 71%) noted the importance of managing their time and available resources. They strive to master time management techniques and effective lesson planning. 15 teachers (or 63%) indicated the need to improve their communication skills, especially in terms of interaction with colleagues and students.

Scientific and theoretical conclusion: the results of the questionnaires, interviews and observations emphasize the importance and the need for more in-depth scientific analysis and the development of more effective strategies and comfortable environment, which will allow more effective development of professional competencies of teachers in the conditions of innovative development. In order to carry out such modernization, it is proposed to make changes in the following plan:

1. Analyzing the current state of the education system: it involves assessing the needs of teachers and educational institutions in the area of professional development and innovation implementation; identifying existing barriers to the introduction of new technologies and methods.

2. Creation of a comfortable environment for innovations is carried out as follows: creation of physical infrastructure, in the form of updated classrooms and their equipping with modern equipment on which innovative technologies are implemented; formation of psychological climate, in the form of an atmosphere of openness and readiness for change

among teachers and administration; support from the management through administrative assistance and allocation of resources for the implementation of innovative projects.

A comprehensive system (model) of teachers' professional competence development focused on innovation management has been developed. The objectives of the system are: development of professional competencies; effective management of innovation environment; formation of leadership position; ensuring stability and sustainability of the educational process; improvement of teaching quality. The objective of the system is to ensure sustainable growth of professional competencies of school teachers in order to stay on top of the requirements of innovations. The main stages of the system implementation are outlined in Figure 3.

The main components of the system are defined as: competence assessment; planning and implementation of individual competence development plans; training and support; control and remedial work; regulatory framework and competence standards that define success criteria for teachers and students.

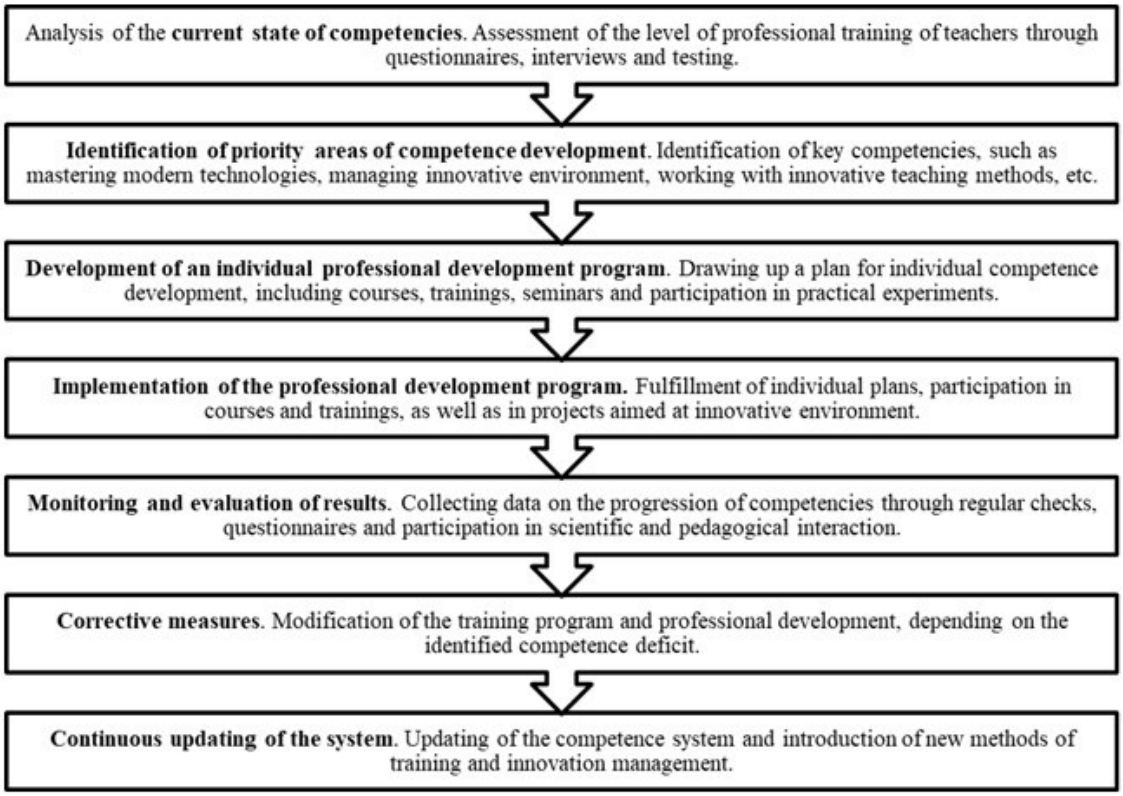

Figure 3 – Integrated system (model) of teachers' professional competence development focused on innovation management

The implementation of the system is based on the following principles: professional orientation of teachers towards innovative thinking and the ability to adapt to changes; strengthening of teachers' responsibility for their professional skills and competence development; support from the administration and colleagues; comprehensiveness and flexibility; duration and regularity of updates aimed at maintaining high innovative standards.

Conclusion

The results of the questionnaire survey research show that school teachers feel the need to develop a number of key competencies, such as mastery of modern technologies and use of innovative teaching methods. They also note the need for additional training and professional development for effective management of the innovation process. An important aspect is the creation of conditions for improving the material and technical base of schools and organizing support for pedagogical creativity.

The results of interviews (focus groups) showed that teachers face a number of difficulties in implementing innovative teaching methods, such as lack of necessary equipment, lack of time and poor technical support. All participants expressed the need to improve their mastery of modern technologies and use innovative teaching methods. At the same time, parents and students emphasized the importance of developing teachers' professional competencies to improve the quality of education.

The observation showed that although many educators have basic skills in using modern technology and implementing innovative teaching methods, there are a significant number of areas for improvement. The main barriers to successfully managing an innovative environment are lack of equipment, lack of time and low technical support. Most teachers realize the need for additional training and are willing to invest efforts in developing their professional competencies.

The developed complex system (model) is aimed at forming and maintaining high professional competence of school teachers in the field of innovation environment management. Its implementation will allow teachers to more effectively implement innovative teaching methods and manage changes in school educational processes. In addition, such a system will improve the quality of the educational process and increase the efficiency of school activities in general.

Further development of the problem of developing professional competencies of school teachers to manage the innovation environment requires a comprehensive approach, including adaptation of educational standards, professional development of teachers, integration of technologies, formation of innovation culture and active cooperation between all participants of the educational process. Integrated measures will help to create a more effective and sustainable school education system capable of responding quickly to all possible innovation challenges.

Contribution of the authors:

Y. Gelishli – conceptualized the study and developed the theoretical framework. He contributed to the formulation of the research objectives, supervised the design of the analytical model, and ensured the integration of international best practices in innovation management in education. He also provided critical revisions of the manuscript to enhance its scientific rigor and international relevance.

Z.Sh. Shavalieva – led the methodological design of the study and coordinated the data collection process in Kazakhstan. She supervised the application of theoretical and empirical methods, including surveys, focus groups, and observational research. Shavalieva also contributed to the analysis and interpretation of the findings and reviewed the final version of the article for academic accuracy.

A.N. Boyarova – conducted the literature review, carried out field research including teacher surveys and interviews, and processed quantitative data through statistical analysis. She drafted the main body of the manuscript, including results, discussion, and the proposed competency development model, and ensured alignment with the practical context of the Kazakhstani school system.

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Инновациялық ортаны басқару бойынша
педагогтердің кәсіби құзыреттерін дамыту

Аннотация. Бұл мақалада инновациялық ортаны басқаруға қажетті мұғалімдердің кәсіби құзыреттіліктерін дамыту қарастырылады. Зерттеу орта білім беру мекемелерінде инновациялық ортаны тиімді басқаруды қамтамасыз ете алатын педагогтердің кәсіби құзыреттілігін дамытудың

негізгі бағыттарын әзірлеу мақсатында жүргізілді. Педагогтерде білім мен дағдылардың инновациялық ортасын басқару үшін қажетті қалыптастырудың негізгі ережелері мен аспектілері қарастырылады. Мектеп мұғалімдерінің инновацияларды басқаруды жетілдіру үшін қажетті кәсіби құзыреттіліктердің маңыздылығы мен проблемаларын қабылдауы мен деңгейіне баға берілді. Нәтижелер көрсетті: мектеп мұғалімдері заманауи технологияларды игеру және оқытудың инновациялық әдістерін қолдану үшін бірқатар негізгі құзыреттерді дамыту қажеттілігін сезінеді, сонымен қатар инновациялық процесті тиімді басқару үшін қосымша дайындық пен біліктілікті арттыру қажеттілігін атап өтеді. Бұл көрсеткіштер мектеп әкімшіліктерінің, оқушылардың ата-аналарының, жоғары сынып оқушыларының және АТ мамандарының пікірлерімен расталады. Инновациялық ортаны сәтті басқаруға негізгі кедергілер ретінде жабдықтың жетіспеушілігі, уақыттың жетіспеушілігі және техникалық қолдаудың әлсіздігі аталды. Инновацияларды басқаруға бағытталған мұғалімдердің кәсіби құзыреттілігін дамытудың кешенді жүйесі жасалды. Оны енгізу мұғалімдерге оқытудың инновациялық әдістерін тиімдірек енгізуге және мектептің білім беру процесіндегі өзгерістерді басқаруға мүмкіндік беруі керек.

Кілтті сөздер: кәсіби құзыреттіліктер, педагогтар, мұғалімдер, инновациялық менеджмент, мектеп әкімшілігі, ата-аналар, жоғары сынып оқушылары, IT-мамандар.

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Развитие профессиональных компетенций педагогов для управления инновационной средой

Аннотация. В данной статье рассматривается развитие профессиональных компетенций учителей, необходимых для управления инновационной средой. Исследование проводилось с целью разработки основных направлений развития профессиональных компетенций педагогов, способных обеспечить эффективное управление инновационной средой в средних образовательных учреждениях. Рассмотрены основные положения и аспекты формирования у педагогов необходимых для управления инновационной средой знаний и умений. Проведена оценка уровня и восприятия школьными учителями проблем и значимости профессиональных компетенций, необходимых им для совершенствования управления инновациями. Результаты показали: школьные учителя ощущают потребность в развитии ряда ключевых компетенций для освоения современных технологий и использования инновационных методов обучения, а также отмечают необходимость дополнительной подготовки и повышения квалификации для эффективного управления инновационным процессом. Эти показатели подтверждаются мнениями администраций школ, родителей учеников, старшеклассников и ИТ-специалистов. В качестве основных препятствий для успешного управления инновационной средой были названы недостаток оборудования, нехватка времени и слабая техническая поддержка. Разработана комплексная система развития профессиональных компетенций учителей, ориентированная на управление инновациями. Ее внедрение должно позволить учителям более эффективно внедрять инновационные методы обучения и управлять изменениями в образовательном процессе школы.

Ключевые слова: профессиональные компетенции, педагоги, учителя, инновационный менеджмент, администрация школы, родители, старшеклассники, IT-специалисты.

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