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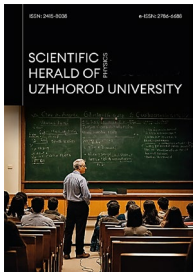

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Teacher's research activity in the context of updating the content of education

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Abstract

Relevance. The development of society in the XXI century assumes the importance of the teacher's role in the direction of increasing the research function, which will be able to actualize the student's position in the educational process. Whereas, the research activity of a teacher characterizes his ability to adapt to educational demands in the VUCA, to act effectively and teach in conditions of uncertainty, to apply the knowledge gained by experience and implement it into his own pedagogical program.

Purpose. Kazakhstan according to UNDP, the goal of integration into the global educational space has been updating the content and structure of secondary education for more than 10 years.

Methodology. This renewal of education presupposes the overcoming of traditionalism in teaching and the gradual introduction of a new model of education, in which cognitive activity and independent thinking of schoolchildren are encouraged. "One of the main tasks of school education today is to prepare students for the rapid perception and processing of large amounts of information, to equip them with modern means and technologies of work, to form their information culture."

Results. The main objectives of the state educational policy in the Concept of modernization of secondary education until 2025 are to ensure continuous processes of updating education, innovative orientation of educational practice at school, changing the function of the teacher in connection with new requirements for his personality. From a translator of knowledge and experience, the teacher must transform into an organizer-facilitator in the construction of a developing and educational environment.

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Conclusions. The teacher of the new model must systematically perceive the pedagogical reality, freely navigate in it, design, construct creative, student-oriented pedagogical systems, freely navigate in the subject area and possess relevant educational technologies. The research culture becomes the basic element in the new teacher model.

Keywords: modernization; requirements; model; pandemic; educators.

Introduction

In the field of education, there is a digital transformation of the school, a not fully researched and meaningful event, the "real and virtual "overflow" of students from schools into the online space, the transformation of teaching methods, ambivalent attitude to gadgets, the collapse of "mechanical" teaching and memorization of educational material by children, school procurement with electronic tools and resources. The analysis of modern pedagogical theory and practice shows that the level of professional knowledge and skills of the teacher, his/her qualifications do not satisfy the goals and values of education that has changed" [1].

The priority of research orientation is fixed in the State program for the Development of Education and Science 2020/25, which plans: close scientific and practical interaction of universities with preschool organizations and schools; increase in the duration of pedagogical practice and remuneration of teachers for the management of practice at the expense of state order and educational grants; creation of a hub center combining efforts to conduct long-term applied research and scientific and methodological support of the secondary education system of Kazakhstan [2-4].

However, the world of VUCA (volatility, uncertainty, complexity and ambiguity) is already making its own unpredictable adjustments. Since 2020, the COVID-19 pandemic has led to the largest disruption in the functioning of education systems in the entire world history, including Kazakhstan [5]. To be fair, it should be noted that the education system in Kazakhstan faced challenges even before the outbreak of the pandemic. Before the COVID-19 outbreak, 6 out of 10 students in Kazakhstan were functionally illiterate, and this is in a country with an above-average income level, where the average child completes 13.7 years of schooling. Based on the World Bank estimates, the pandemic threatens to lead to functional illiteracy of more than 100.000 Kazakhstani students [6]. The goals planned by the state education development programs have been postponed, including the transition to meta-competence.

On the other hand, the crisis has served as an encouragement for innovation in the field of education. Innovative approaches are used to ensure the continuity of education and professional training: from radio and television broadcasts to the provision of sets of materials for studying at home. Thanks to the prompt response measures to organize a regular educational process, solutions for distance learning have been developed [7].

Since the beginning of the pandemic, educators have been tasked with implementing distance learning methods, often without sufficient methodological assistance, training or resources. Web classroom applications and messaging applications have become useful tools and new means of communicating with students and fellow teachers [8-9]. In general, teachers all over the world were mostly not ready to ensure the continuity of learning and switch to new teaching methods. Even with sufficient infrastructure and Internet access, many teachers do not have the most basic ICT skills, and, consequently, it will be difficult for them to continue to develop professionally, not to mention high-quality distance teaching [10-11]. The crisis caused by COVID-19 has demonstrated that the system of teacher training both at the stage of initial training and advanced training in the course of work needs to be reformed in order to more effectively develop teachers' skills in using new teaching tools [12].

Materials and Methods

In order to test the hypothesis put forward in the period 2019-2021, we organized experimental work with the participation of teaching teams of three schools: I. Kutpanuly School, Zh. Tashenova School, Mangystau school, School No. 11, Turkestan region M. Kashkari school in Kentau.

The research process required the use of the most adequate methods and techniques: the study of thematic psychological, pedagogical and scientific-methodical literature and systematization of views on the problem of research by Kazakhstani and foreign authors, international experts from education, politicians in the field of education; reflection and generalization of pedagogical experience, own and collective teachers of two secondary schools; online questionnaire of education experts and teachers; methods of processing expert opinions Rubinstein SWOT analysis; pedagogical experiment; processing of the results of a pedagogical experiment.

The characteristics of the content and main trends of the state educational policy in the context of the formation and development of the research activity of teachers as the main condition for the innovative future of Kazakhstan are studied and determined.

Today, the problem of the preparatory (formative) stage in the career and activity of a teacher in light of research and experimental activity is characterized by a reorientation to scientific creativity. The attitude of practical teachers to professional research activity has changed significantly: from its rejection to awareness of the need to acquire skills for its implementation.

Currently, it is widely recognized that the high quality of teaching at school is the most important factor affecting student academic performance. This, in turn, speaks about the importance of pedagogical education, both professional and additional.

An analysis of the educational systems of many countries of the world has shown that the design of the education system still meets the needs of yesterday. Moreover, "the degree to which our educational systems destroy our collective potential is often underestimated" [13]. They need to be changed to meet the challenges of the future, including the growing social, environmental and economic complexity in all spheres of human life. We need

to rethink the goals and meanings of education so that they reflect the needs of today. Modernization of the educational process has identified the task, in addition to the continuous improvement of professional knowledge, the innovativeness of research activities. Schools have felt a shortage of personnel in practice-oriented teachers, personnel with scientific and pedagogical, research, creative, reflective, innovative type of thinking, individual style of professional activity, a conscious need for continuous self-education.

Results

On the basis of experimental work to improve research skills and develop research culture, teaching teams of 4 schools from different regions of the republic were diagnosed (according to the diagnostic tools in Appendix A). We present the data obtained in the Table 1.

Table 1. The level of formation of research skills before and after conducting experimental work

Levels / Schools	advanced		basic		satisfactory		insufficient	
	before	after	before	after	before	after	before	after
School named after I.Kutpanuly.	0	10	35	55	45	30	20	5
School named after Zh. Tashenov	0	-	38	38	42	42	20	20
School №11, Mangystau	0	8	43	58	33	26	25	8
Turkestan, Kentau, School named after M. Kashkari	0	9	38	54	35	28	27	9

Source: compiled by the author.

Measuring the level of formation of research skills through interviews and questionnaires, the following results objectively emerged: before the experimental work, no one had an increased level of formation, but after completing the entire training cycle, 27 people have already demonstrated this level, 10 of them at the I.Kutpanov school (Zhibek-Zholy, Akmola region), 8 teachers from secondary school №11 from Mangystau and 9 subject students from the M.Kashgari school (Kentau, Turkestan region).

We also see from the Table 1 that the number of teachers who had an unsatisfactory level of formation of research skills, of which there were about 20-25 people in each school (on average, every third), has significantly decreased. After undergoing intensive training and an individual approach, their number decreased by 3-4 times, with the exception of the School named after Zh.Tashenova, whose teaching staff did not participate in the organized refresher courses within the framework of this master's study. It should also be noted that the number of "average people", that is, teachers who had basic and satisfactory levels of formation of research skills has also undergone positive changes. So, the number of teachers-"triples", that is, with a satisfactory level, decreased in favor of "good", that is, they moved to the "basic" and "advanced" levels. This dynamic can be easily traced in the following Figure 1.

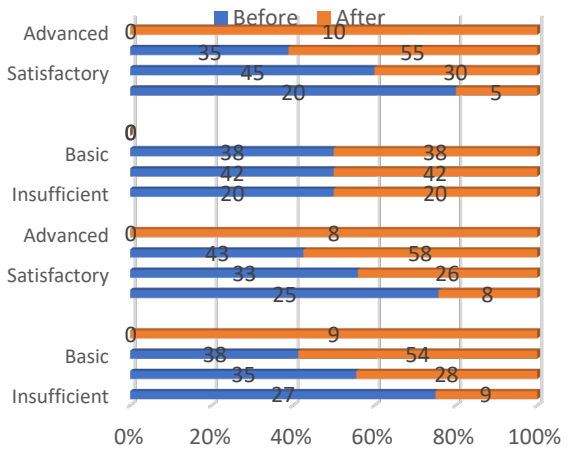

Figure 1. Levels of formation of the teacher's research skills

Thus, we conclude that the effectiveness of the conducted experimental work with secondary school teachers on the intensive development of the level of formation of their research skills has been confirmed. The

results of the survey showed that the dominant motives underlying a positive attitude to research activities were external cognitive and internal motives for personal achievement: the desire to make the educational process more productive, the desire to improve it, increase their professional level.

When choosing a methodology for studying the motivational characteristics of a person, we relied on the following provisions:

1. Professional self-improvement of a specialist is a relatively independent type of internal activity aimed at accepting and assimilating the established requirements for his personality.

2. The motivation of professional self-improvement of a specialist is a set of motives and conditions that determine, direct and regulate the improvement of their professional competence.

The system of relations that determine the motivation of professional self-improvement of the individual can be viewed from three positions: the attitude of the individual to his professional activity; attitude to her/himself as a professional; attitude to self-improvement in the professional environment. Thus, the results of experimental work confirm the effectiveness of the developed model of teacher training for research activities, which gives each teacher the opportunity, being at her/his professional level, to study the basics of pedagogical research and apply them in her/his pedagogical practice.

Currently, it is widely recognized that the high quality of teaching at school is the most important factor affecting student academic performance. Successful education systems in the 21st century are doing everything possible to develop teachers' responsibility for professional practice. In the process of studying the methodological culture of research teachers, it was clarified that the teacher performs two types of actions: orientation and performance. We found out that readiness for research activity and its components, such as cognitive, motivation, orientation, technology operational are important.

Modern society demands a lot from teachers. We expect them to have a deep and broad understanding of what they teach and who they teach. This implies deep professional knowledge on the subject, on the mechanism of the cognitive process, on the technology of learning. In addition, teachers should create the most favorable learning environment and atmosphere. The creation of all this is impossible without the formation and development of research skills, with the help of which the teacher grows in her/his profession. Students are unlikely to want to study all their lives if they do not see an example of a teacher – an active “lifelong” student.

There are aspects that make the work of teachers much difficult and different from the work of other specialists. Teachers need to be experts in multitasking, as they respond to many different needs of students at the same time. They also do their work in the dynamics of the classroom, which is always unpredictable, and this does not leave teachers a second to think about how to react. All actions of the teacher are evaluated by colleagues, management, students, parents of students. In addition to duties from job descriptions, society expects teachers to have developed emotional and social intelligence: that they will be motivated, compassionate and thoughtful; encourage student engagement and responsibility; respond to students from different backgrounds with different needs and encourage cooperation and social cohesion; provide constant assessment and feedback by students and their parents; create a special atmosphere in which students would feel valued and involved.

During the research work, convincing evidence was obtained that teachers need to participate in research, firstly, in order to be aware of the latest achievements in their academic subject and effective teaching methods. Secondly, having the potential, motivation and the opportunity to use their research skills, the teacher forms her/his own style and effective teaching methodology. Highly effective education systems demonstrate that this type of research practice requires clinical training; carefully designed primary teacher education programs allow trainee teachers to integrate academic knowledge into practical experience. Then it is necessary to focus on “embedding” innovations and joint research into the professional culture of the teacher.

In general, research activity is one of the components of a teacher's professional activity. As a result of studying the specifics of research activity in the historical and modern experience of educational institutions, the peculiarities of the organization of pedagogical research at the level of target settings, content, and the position of the teacher-researcher are revealed. An indicator of a teacher's readiness for research activity is a research culture, which is characterized by the unity of three components: motivational component is awareness of its role, place and significance in the pedagogical process, informational component is the teacher's understanding of the essence of research activity (knowledge of methodology and methodology) practical component is the formation of skills to carry out pedagogical research.

Generalization of trends in educational policy in the world and in Kazakhstan in the context of the research activities of teachers has shown that in recent decades there has been a general trend at the international level towards greater professionalism in teacher education with higher entrance barriers and qualification requirements. Another trend is that, in comparison with conventional university educational programs, pedagogy has become more flexible and practice-oriented.

In general, 7 trends were identified: a crisis of value orientations; a crisis in understanding the holistic scientific picture of the world; the need for integration of academic disciplines, meta-subjects and convergence; an increase in the sources of information resources and an increase in the role of the teacher, who has “logistic” functions; awareness of the need for interaction of the whole society in the modernization of educational content; giving importance to the psychological aspect, training should become personalized and student-oriented; increasing the importance of cultural identity and national cohesion, its introduction into the educational process.

Due to the change in educational trends, the transition to the research activity of a teacher forming a meta-subject, which is a requirement of modern society. Within the framework of the study, the peculiarities of the development of the research competence of teachers in the conditions of updating the content were revealed. There are several vectors (ways, methods) to improve the educational

level of a teacher, the formation and development of pedagogical and research abilities. The first is self-education. The next way to improve the educational level of a teacher is to participate in special courses. The third vector of improving the educational level of a teacher is the widespread use of integrative, meta-subject and convergent methods. The fourth vector of improving the educational level of a teacher is to develop their own digital literacy. The fifth direction of improving the research culture is to strive to be part of the school's research team, share its values and mission, take responsibility and leadership, and develop your own emotional capital. The sixth direction of improving the teacher-researcher is to develop in the direction of a "holistic person", to enjoy the process of cognition and the creation of new knowledge.

Key features of effective vocational training include: participation in joint investigation, peer review and monitoring, so that teachers can understand how to use data and information from various sources (including peer reviews and specialist consultations out of school), as well as how to participate in subject innovations to test new ideas and their use in teaching. In order for educators to maximize the benefits of research activities, they must rely on certain skills, such as: careful formulation of research questions or problems, model selection (for example, students focus on research), as well as the development of data collection tools for the formation and classification of their observations. Teachers should also be "literate" in the sense of being able to read and interpret professional sources.

On the basis of experimental work, indicators of the formation of a motivational and personal criterion were formulated: the nature of professional and research motivations; professional and value orientation; professionalization of the teacher as a researcher.

The theoretical and methodological criterion serves to characterize the teacher's professional knowledge, as well as the level of her/his methodological formation, possession and application of research methods, the level of understanding the methods and principles of research activities in her/his practice. In practice, this means that the teacher follows the latest scientific research in professional activities, as well as in the field of education, politics, education, ecology; owns and applies the methodology of research activities and research ethics; aware of all conceptual and practical contradictions, problems, innovations.

The practice-oriented criterion characterizes the ability of a teacher to make decisions, act based on the formed professional values, navigate science in the implementation of pedagogical research, when implementing the results obtained in educational practice. Indicators of the formation of the practice-oriented criterion also characterize the forms and methods of the educational technologies used (integration, meta-subject, convergence, project, contextual, problem-based learning, etc. In practice, this means that the teacher: conducts research activities; analyzes, reflects and is able to present the results of scientific research; designs and implements the results of scientific research in the content of education.

These criteria were divided into the following levels: insufficient, satisfactory, basic, advanced. Thus, we have formulated the main points of renewal in education at the present stage and the vectors of development of the teacher's research competencies. On this basis, the competence image of Kazakhstani teachers-researchers was modeled, who will be able to refract the modern educational reality and fully implement the tasks of the updated education.

A preliminary SWOT analysis was carried out. As a result of the work carried out according to this methodology, an objective expert picture of the state of research activity was obtained not only for an individual teacher, but also for the teaching staff of the school as a whole. Experts showed the weaknesses of modern schools and the general formal attitude of the inert majority of Kazakhstani teachers, who, despite the efforts made by the state, despite relatively free access to all resources, do not realize the key role of research competence in the educational process.

Discussion

In recent decades, there has been a general trend at the international level towards greater professionalism in teacher education with higher entrance barriers and qualification requirements. Another trend is that, in comparison with conventional university educational programs, pedagogy has become more flexible and practice-oriented. Research by British scientists in the field of pedagogy has shown that among the most important issues in an effort to improve the quality of teaching and learning is the use of research to develop the program and structure of teacher education. Recognized international expert in the field of education A. Schleicher in the review of TALIS-2018 notes that at the present stage education is no longer just teaching a child subject knowledge, but helping them to develop a reliable compass and tools that allow them to confidently navigate in an increasingly complex, changeable and uncertain world. Today's opportunities allow you to freely get a certain set of knowledge, at least with the help of Google and educational platforms. A modern teacher should help a student to think independently and work with others, as well as develop individuality, freedom, will and determination.

Moreover, during a short period, we can safely talk about a change in the educational paradigm of education about the "concept of school education 4.0" [14] by analogy with industry 4.0. This concept implies the introduction of technological solutions in various fields and taking into account such key factors as wireless communication, artificial intelligence, the Internet of things, etc. everything that "smart" industry and society do. People with flexible thinking believe that their success depends not on their initial abilities and level of intelligence, but on the efforts invested in self-development. This approach creates a love of constant learning and resistance to difficulties and failures. During the experiments, it was proved that people with flexible thinking keep the growth mindset and are ready to start doing something new and complex - thanks to this, new neural connections appear in the brain, and existing ones are strengthened.

The society demands a lot from the pedagogical community. We expect them to have a deep and broad understanding of what they teach and who they teach. This

implies deep professional knowledge on the subject, on the mechanism of the cognitive process, on the technology of teaching; the teacher should create the most favorable learning environment and atmosphere. This is impossible without the formation and development of research skills, with the help of which the teacher grows in his/her profession. A student is unlikely to want to study all his/her live long if he/she does not see an example of a teacher as an active "lifelong" student.

There are aspects that make the work of teachers much difficult and different from the work of other specialists. Teachers need to be experts in multitasking, as they respond to many different needs of students at the same time. They also do their work in the dynamics of the classroom, which is always unpredictable, and this does not leave teachers a second to think about how to react. All actions of the teacher are evaluated by colleagues, management, students, parents of students. In addition to duties from job descriptions, society expects teachers to have developed emotional and social intelligence: being motivated, compassionate and thoughtful; encourage student engagement and responsibility; respond to students from different backgrounds with different needs and encourage cooperation and social cohesion; provide constant assessment and feedback by students and their parents; create a special atmosphere in which students would feel valued and included [15-16].

According to the OECD International Survey "Teaching and Learning International Survey (TALIS)", nine out of ten teachers consider the opportunity to influence the development of children and contribute to the development of society as the main motivation for entering the profession. TALIS also revealed that educational policy is the visible tip of a huge iceberg. The reason why it is so difficult to transform the education system is that there is a much larger invisible part under the waterline, which consists of the interests, beliefs, motivations and fears of teachers. And this is where the hidden resistance to innovation on the part of educators occurs, this part tends to slip under the radar of public policy.

Politicians rarely succeed in reforming education if they do not help society realize what needs to be changed, create a common understanding and collective responsibility for change; if they do not channel resources, build capacity and create the right conditions. In this regard, it is necessary to change the "political climate" and the reporting mechanisms, to direct them to encourage innovation and development, but not to comply with requirements. Foreign experience (Finland, Sweden, Slovakia) shows that where teachers are not engaged in designing changes, they rarely help in their implementation.

The views of teachers expressed in TALIS tell us a lot about the gap between pedagogical vision and practice, between professional aspirations and the still highly industrial organization of labor. To meet the growing demand for high-quality teachers, countries will need to make more efforts not only to make teaching more attractive from a financial point of view, but also, most importantly, from an intellectual point of view, when advanced knowledge workers enter the teaching profession. Professional autonomy and a culture of cooperation also means giving educators more opportunities to prepare for tomorrow's world. According to TALIS, more than half of teachers in OECD member countries have been trained in the use of learning technologies, but only about 30%* feel well prepared when they return to work. This is quite correlated with the opinion of two-thirds of TALIS teachers, who report that the most effective professional development in which they participated was focused on innovations in their teaching [17-20].

Successful education systems in the 21st century are doing everything possible to develop teachers' responsibility for professional practice. But simply perpetuating a prescriptive learning model will not allow creative teachers to be trained: in other words, those who are trained only to warm up pre-prepared dishes are unlikely to become master chefs. In contrast, when teachers feel a sense of ownership over their classes, and students feel a sense of ownership over their learning, productive learning occurs. Thus, the answer lies in strengthening trust, transparency, professional autonomy and a culture of cooperation in the profession at the same time. The industrial model of school education makes changes in a rapidly changing world too slow. The task is to draw from the experience of teachers and school leaders and involve them in the development of better policies and practices. Imagine a giant open-source community of educators where they can share their ideas and practices and which unlocks the creative potential of educators by simply harnessing people's desire to contribute, collaborate and be recognized for their achievements.

Attracting, developing and retaining the best teachers is the biggest challenge that education systems have to face. To cope with this task, we should turn to other sectors of our society to find out how they build their teams. It is necessary to adopt the best technologies of personnel management from business: the stages of recruitment, selection, mentoring for beginners, professional development; material and non-material incentives, evaluation of their effectiveness and efficiency, quality control of their work.

Professor Gary Beauchamp (Cardiff Metropolitan University), Professor Linda Clark (University of Ulster), Dr. Moira Hulme (University of Glasgow) and Professor Jean Murray (University of East London) reviewed the current policy in the field of teacher education in the United Kingdom. Their analysis highlights the growing divergence of old standards and new required competencies. The researchers especially highlighted the situation in Scotland and Northern Ireland, where there is a clear recognition of teaching as a complex profession that requires teachers to develop critical thinking and actively participate in research at every stage of professional development. The situation in Wales is more ambiguous: the importance of research activity is declared, but not reflected in the standards. In England, the research nature of teaching is not disputed, but critics of the recent reforms of primary teacher education have expressed serious concern about the reduction in research potential caused by a decrease in funding for applied research.

From an international perspective, Dr. Maria Teresa Tatto of the University of Michigan compared the role of research in four contrasting examples of educational systems: Chile, USA, Singapore and Finland (2010). She

particularly focused on the implementation by the Finnish Ministry of Education (2007) of a coordinated national research program. For each country Tatto explores the nature and organizational characteristics of teacher education. Singapore and Finland, whose educational systems are constantly "coming to the fore", are developing "from the bottom up" and rely heavily on methodologically verified research algorithms and practice. Thus, arguments were presented about the existence of a causal relationship between the features of the training program (including research components) and the success of the education system. In the educational systems of Finland, Korea, and Singapore, digitalization tools are used in order to achieve a consistently high level of students.

Some of the key philosophical questions that arise about the role of research in the professional training of teachers are considered by Professor Christopher Winch (King's College, London), Doctors Janet Orchard (University of Bristol) and Alice Oancha (University of Oxford). The authors identify three interrelated and additional aspects of teachers' professional training: practical wisdom (common sense), technical knowledge and critical reflection.

They argue that educational concepts lack the capacity for critical reflection, that is, a deeper understanding of practice, broad scientific data and values. Unlike any narrow or simplified representation, the idea of a teacher as a professional combines all three aspects of knowledge - practical, technical and theoretical - i.e. knowledge gained through personal experience, research, analysis and critical reflection. It is important to note that research can play an additional role in relation to each of these parameters: for example, participation in research can provide information and improve the technical knowledge of teachers, and knowledge of specific teaching methods is necessary for professional judgment.

Drs Catherine Byrne and Trevor Matton from the University of Oxford study a small number of highly innovative programs, partly based on models of "clinical practice", when practical participation of schools is required. In such experiments, school teachers gain access to the "practical wisdom" of experts, which allows them to participate in the research process, interpret and comprehend the processes; and future teachers are encouraged to develop and begin professional judgment. In addition, the authors analyzed data on system-wide approaches in the Netherlands and Finland, which also use the principles of "clinical practice". In general, they conclude that clinical training helps to determine the effectiveness of a teacher, affects the training and confidence of novice teachers positively, and graduates of such programs are distinguished by the best preparation for their first teaching position.

Analyzing the transition from primary teacher education to continuous professional development, researcher Philippe Cordingli took care of the problems of finding ways to effective training and offered to involve specialist consultants and external experts who will help determine effective strategies and techniques. Also, in his opinion, it is extremely important for colleagues to participate in joint searches, as this enhances professional dialogue and mutual risk, which gives teachers a chance to "learn to learn" and explore why something works and does not work in different contexts. Thus, the contribution of research to the professional growth of a teacher is potentially very high.

Finally, Dr. Monica Mincu from the University of Turin explores the contribution of research to improving the quality of teaching and, consequently, improving the quality of learning outcomes for students. Based on the international literature on improving the effectiveness of teachers and schools, Mincu gives three key arguments about the contribution of research:

- firstly, teachers and schools are of the greatest importance for underachieving students, who often come from dysfunctional families;
- secondly, teachers and school leaders are the main "improvers" of the school and the system, especially with the support of specialists from both inside and outside the school;
- thirdly, research activity has taken a central place as the basis for improving school education.

It is proved that the involvement of practitioners in research and their participation contributes to the successful improvement of the school in various ways: through the exchange of information on effective practice; involving practitioners in testing new ideas, implementation and monitoring.

In Scotland, government policy is aimed at developing a systematic and consistent approach to careers through vocational training. However, in the rest of the UK, this approach is fragmented. An example of promising large-scale ones is the London Challenge, the repetition of the success of which in all parts of the country will be very problematic in the absence of a coordinated strategy, especially in the context of a pandemic and quarantine. In addition, there are obstacles associated with the involvement of practitioners in research, due to lack of time, opportunities, and academic load.

Thus, there is convincing evidence that teachers need to participate in research, firstly, in order to be aware of the latest achievements in their academic subject and effective teaching methods. Secondly, having the potential, motivation and the opportunity to use their research skills, the teacher forms his own style and effective teaching methodology. Highly effective education systems demonstrate that this type of research practice requires clinical training; carefully designed primary teacher education programs allow trainee teachers to integrate academic knowledge into practical experience. Then it is necessary to focus on "embedding" innovations and joint research into the professional culture of the teacher [21-24].

The experience of the UK shows that, being the centers of best practice in teacher education, there is no consistent and systematic approach to the formation and development of a teacher's research competence from the moment of preparation and throughout the working life of teachers even in this country. There is an urgent need for all stakeholders (governments, national agencies, schools, universities and teacher organizations) to work together to create a national strategy for teacher education and vocational training based on the principles of "evidence-based clinical practice".

In recent years, education politicians and public figures around the world have been guided by the results of international assessments of student performance, such as PISA, PIRLS and TIMMS. Faced with the challenges of demographic and technological changes and global economic competition, exacerbated at present due to low economic growth and high financial uncertainty, education policy makers are under great pressure from society, which requires more investment in the skills and potential of the future workforce to ensure the strategic potential of economic growth and prosperity [25-28]. In line with the priorities of the EU and the OECD, the UK government has invested significant efforts and resources in improving the learning outcomes of all students, in order to break the "vicious circle" of poverty between generations.

The emergence of international rating tables has given rise to a new wave of comparative studies seeking to discover the "secret of success" of other systems and identify the distinctive features of those countries that constantly go top. Internal and external evaluations have confirmed the importance of "effective" teachers and "high-quality" teaching, which is now recognized as the most important factor affecting student achievement. This focuses on the importance of teacher education. Teacher education, as well as recruitment and retention strategies are considered as "the most direct and effective way to improve the quality of education" [29]. Indeed, experience has shown that education reforms that do not take into account professional pedagogical education are "doomed to inefficiency" [30].

The task of the politicians was to develop a basic strategy for improving the quality of education and improving student academic performance, namely, it was necessary to determine how to organize pedagogical education: how much time to allocate to learning at different "life stages" of a professional career and how to structure programs in order to use time effectively; what required skills and knowledge are needed for current and future teachers; whether all policy decisions are based on research on effective teaching and effective pedagogical education.

In general, all the authors agree that over the past three decades there has been a general international shift towards greater professionalism in teacher education, entrance standards and qualification requirements have been increased; an important counter-trend has also been identified from traditional programs towards more flexible, school-oriented directions, towards deregulated and more accelerated options [31]. Since the 2000s, EU authorities and national agencies have sponsored and supported a number of initiatives aimed at encouraging the use of reliable research to inform educational policy and encouraging more systematic participation of practitioners. Thus, the international comparative analysis highlights the importance of common approaches to teaching and vocational training among leading and improving school systems.

Key features of effective vocational training include: participation in joint investigation, peer review and monitoring, so that teachers can understand how to use data and information from various sources (including peer reviews and specialist consultations outside school), as well as how to participate in subject innovations to test new ideas and their use in teaching. In order educators could maximize the benefits of research activities, they must rely on certain skills, such as: careful formulation of research questions or problems, model selection (for example, students to focus on research), as well as the development of data collection tools for the formation and classification of their observations. Teachers should also be "literate" in the sense of the ability to read and interpret professional sources.

Kazakhstan is also currently undergoing an active process of reforming the model of pedagogical education of the future. As the Kazakh researchers of pedagogical education E. Sharplin, A.H. Ibrasheva, D.A. Shamatov, A.K. Rakisheva note in their article, "Two important problems to improve the quality of secondary education in Kazakhstan are the quality of teachers and the quality of the content of education" [32]. It is noted that the implemented reforms require a new level of professionalism of Kazakhstani teachers. As professionals, teachers need highly specialized fields of knowledge, an understanding of ethical norms, independent decision-making skills and a high level of social responsibility. They can no longer rely on working with textbooks solely, they need to develop differentiated lessons to meet the needs of students with diverse needs. The change in professional expectations for teachers was accompanied in Kazakhstan by reforms of the certification system.

In 2016, five qualification categories of teachers were introduced: teacher; teacher-moderator; teacher-expert; teacher-researcher and teacher-master. These categories replaced the previous four, which preferred long-term experience in the field of employment, rather than professional competencies and experience. The reformed Kazakh system requires teachers not only to demonstrate their professional competence in the classroom (subject knowledge, teaching skills), but also to reflect and analyze pedagogical practices in cooperation with colleagues, as well as to participate in research activities. Educators are now required to participate in various activities out of the classroom, including participation in professional communities for research and other activities. It is worth noting that efforts to improve the qualifications of teachers were associated during the reforms with the desire to improve the quality of teachers [33-35].

Necessary to get rid of stereotypical ideas of scientific creativity exclusively as an "elite" activity of talented teachers and that it is normal for ordinary teachers to use ready-made scientific and methodological recommendations. Such a view contradicts the requirements of the updated education regarding the professional activity of the teacher.

In Kazakhstan in 2018 by the National Academy of Education named after Altynsarin analyzed 252 curricula of 13 universities that train teaching staff [36]. It was found that less than seven percent of the curricula in these universities include components of the updated content of secondary education. The names of the curriculum modules do not reflect the updated content of secondary education, and the learning outcomes are not focused on understanding the concepts of the updated content. The experts noted that "the expected learning outcomes largely reflect the academic knowledge, not the practical skills of future teachers, as well as their personal and professional

competence, i.e. they do not meet the definitions of the professional standard “Teacher”.

In general, it is noted that in Kazakhstan, the introduction of education reform was mainly focused on the system of teacher training for the updated content of secondary education. All these years, pedagogical education has remained largely aloof from reforms. The growing dissatisfaction of society with the quality of teachers, as well as the unsatisfactory results of international comparative studies of school students gave impetus to the adoption of the Law “On the status of a teacher” [37].

Thus, in this case, we found out that there is currently a significant movement towards supporting the solution of the problem of reform in teacher education. This reform should clarify the mission of teacher education, define new content of curricula, revise selection criteria and qualifications for teacher education, strengthen accountability mechanisms and “revitalize” teaching staff with the skills, knowledge and aptitudes necessary for the development of future generations of quality teachers and improve well-being and well-being for all in Kazakhstan.

Conclusions

Measuring the level of formation of research skills through interviews and questionnaires, the following results objectively emerged: before the experimental work, no one had an increased level of formation, but after completing the entire training cycle, 27 people have already demonstrated this level, 10 of them at the I. Kutpanov school (Zhibek-Zholy, Akmola region), 8 teachers from secondary school No. 11 from Mangystau and 9 subject students from the M. Kashgari school (Kentau, Turkestan region). The number of teachers who had an unsatisfactory level of formation of research skills has significantly decreased, of which there were about 20-25 people in each school (on average, every third). After undergoing intensive training and an individual approach, their number decreased by 3-4 times, with the exception of the Zh. Tashenov School, whose teaching staff did not participate in the organized refresher courses within the framework of this master's study. It should also be noted that the number of "average people", that is, teachers who had basic and satisfactory levels of formation of research skills has also undergone positive changes. So, the number of teachers “triples”, that is, with a satisfactory level, decreased in favor of “good”, they moved to the “basic” and “advanced” levels. Thus, we conclude that the effectiveness of the conducted experimental work with secondary school teachers on the intensive development of the level of formation of their research skills has been confirmed.

As a result of the experimental work, the need for continuous improvement of theoretical and practical knowledge and skills for the formation of teachers' research activities is revealed, the skill of research activity is being improved. The project principle of the implementation of research activities contributes to the formation of systematic thinking among all participants in the educational process.

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Conflict of Interest

None.

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Дослідницька діяльність вчителя в контексті оновлення змісту освіти

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Анотація

Актуальність. Розвиток суспільства у XXI столітті передбачає важливість ролі викладача у напрямку посилення дослідницької функції, яка буде здатна актуалізувати позицію студента в освітньому процесі. Тоді як дослідницька діяльність викладача характеризує його здатність адаптуватися до освітніх запитів у ВНЗ, ефективно діяти та викладати в умовах невизначеності, застосовувати набуті знання на практиці та імплементувати їх у власну педагогічну програму.

Мета. Казахстан за даними ПРООН, з метою інтеграції у світовий освітній простір вже більше 10 років оновлює зміст і структуру середньої освіти.

Методологія. Оновлення освіти передбачає подолання традиціоналізму у викладанні і поступове впровадження нової моделі навчання, в якій заохочується пізнавальна активність і самостійне мислення школярів. "Одне з головних завдань шкільної освіти сьогодні - підготувати учнів до швидкого сприйняття та обробки великих обсягів інформації, озброїти їх сучасними засобами і технологіями роботи, сформувати їх інформаційну культуру".

Результати. Основними завданнями державної освітньої політики в Концепції модернізації загальної середньої освіти на період до 2025 року є забезпечення безперервних процесів оновлення освіти, інноваційна спрямованість освітньої практики в школі, зміна функції вчителя у зв'язку з новими вимогами до його особистості. З транслятора знань і досвіду вчитель має перетворитися на організатора-фасилітатора у побудові розвивального та освітнього середовища.

Висновки. Учитель нової моделі повинен системно сприймати педагогічну реальність, вільно орієнтуватися в ній, проектувати, конструювати творчі, орієнтовані на учня педагогічні системи, вільно орієнтуватися в предметній галузі та володіти відповідними освітніми технологіями. Дослідницька культура стає базовим елементом нової моделі вчителя.

Ключові слова: модернізація; вимоги; модель; пандемія; освітяни; освітяни.