Journal of Siberian Federal University. Humanities & Social Sciences
2024 17(11): 2201–2212

EDN: ZRLDZR
УДК 37.032.5

Development of Future Teachers' Risk-Oriented Thinking as a Condition for Forming Their Risk-Recognizing Competence

Nailya N. Askhadullina[a], Liliya R. Khaliullina[a], Anastasiya V. Ledeneva[b], Anastasiya P. Eremina[b] and Guldana Ye. Akhmetova[c]
[a]*Elabuga Institute of Kazan Federal University*
Elabuga, Russian Federation
[b]*Institute of Pedagogy and Psychology*
Orenburg State Pedagogical University
Orenburg, Russian Federation
[c]*Karaganda Medical University*
Karaganda, Republic of Kazakhstan

Received 24.07.2024, received in revised form 30.07.2024, accepted 09.10.2024

Abstract. Providing innovative development of educational processes is associated with a lot of risks, which have different origins. The authors identified several groups of pedagogical risks: personal, organizational, and technological. To overcome risks with minimal losses teachers must have a high level of risk-oriented thinking.
The aim is to consider future teachers' risk-oriented thinking as a condition for the formation of their risk-recognizing competence.
The experiment was conducted using the author's questionnaire, developed on the basis of A. G. Shmelev's questionnaire "Study of risk propensity" and the classification of risks by I. G. Abramova. The forming experiment consisted in the participation of students in institute's innovative projects.
The author's definition of the concept of "risk-oriented thinking of a teacher" was formulated, the relevance of the studied problem related to the future teachers' readiness to pedagogical innovations was confirmed.

Keywords: innovative activities of teachers, future teachers, risk, risk-recognizing competency, pedagogical condition, risk-oriented thinking, educational organization resilience; risk of academic failure.

This paper has been supported by the Kazan Federal University Strategic Academic Leadership Program.

Research area: Social Structure, Social Institutions and Processes.

* Corresponding author E-mail address: nelyatdkama2008@rambler.ru; alter_ego.08@mail.ru; a.v.ledeneva@bk.ru

Citation: Askhadullina N. N., Khaliullina L. R., Ledeneva A. V., Eremina A. P., Akhmetova G. Ye. Development of future teachers' risk-oriented thinking as a condition for forming their risk-recognizing competence. In: *J. Sib. Fed. Univ. Humanit. soc. sci.*, 2024, 17(11), 2201–2212. EDN: ZRLDZR

Развитие риск-ориентированного мышления будущих учителей как условие формирования у них компетентности распознавать риски

Н.Н. Асхадуллина[а], Л.Р. Халиуллина[а], А.В. Леденева[б], А.П. Еремина[б], Г.Е. Ахметова[в]

[а]Елабужский институт КФУ
Российская Федерация, Елабуга
[б]Институт педагогики и психологии
Оренбургский государственный педагогический университет
Российская Федерация, Оренбург
[в]Медицинский университет Караганды
Республика Казахстан, Караганда

Аннотация. Обеспечение инновационного развития образовательных процессов сопряжено с рисками, имеющими разное происхождение. Авторы выделили несколько групп педагогических рисков: личностные, организационные и технологические. Для преодоления рисков с минимальными потерями педагог должен обладать высоким уровнем риск-ориентированного мышления.
Цель – рассмотреть риск-ориентированное мышление будущих учителей как условие формирования их компетентности распознавать риски.
В исследовании авторы опирались на диалектико-материалистический принцип детерминизма (Л. С. Выготский, С. Л. Рубинштейн). Эксперимент проводился с использованием авторской анкеты, разработанной на основе опросника А. Г. Шмелева "Исследование склонности к риску" и классификации рисков И. Г. Абрамовой. Формирующий этап заключался в участии студентов в инновационных проектах института.
В результате сформулировано авторское определение понятия "риск-ориентированное мышление педагога", подтверждена актуальность исследуемой проблемы.

Ключевые слова: инновационная деятельность учителей, будущие учителя, риск, способность распознавать риск, педагогическое состояние, риск-ориентированное мышление, устойчивость образовательной организации; риск неуспеваемости.

Данная работа была подготовлена при поддержке Программы стратегического академического лидерства Казанского федерального университета.

Научная специальность: 5.4.4. Социальная структура, социальные институты и процессы (социологические науки).

Цитирование: Асхадуллина Н. Н., Халиуллина Л. Р., Леденева А. В., Еремина А. П., Ахметова Г. Е. Развитие риск-ориентированного мышления будущих учителей как условие формирования у них компетентности распознавать риски. *Журн. Сиб. федер. ун-та. Гуманитарные науки*, 2024, 17(11), 2201–2212. EDN: ZRLDZR

Introduction

In today's world, the advancement of education places significant emphasis on cultivating the fundamental competencies of an "innovative individual". This encompasses not only the preparedness to thrive in a highly competitive environment but also the ability to engage in calculated risk-taking, demonstrate creativity, and exhibit entrepreneurial qualities.

The need for innovation determines the instability of various spheres of human life. Any transformation is inevitably associated with many risks. Moreover, in a complex, unstable and ambivalent world, risks become an integral part of any professional field (Waller et al., 2019; Hadar et al., 2020; Graça et al., 2021). To function in today's world, it is important to develop an individual willing to take risks in the process of mastering and implementing innovations.

Teacher's activity in a complex world becomes no less risky. According to N. N. Askhadullina (Askhadullina, 2016), the following groups of pedagogical risks should be distinguished: personal risks (professional burnout (DeCaroli et al., 2021); unwillingness to face difficulties, etc.), organizational risks (lack of innovative experience of interaction with the professional community, teachers' resistance to innovations introduced by management, etc.), technological risks (Dallat et al., 2021) (forced emergency transition to distance learning, academic failure of schoolchildren, etc.). It is important to acknowledge that the teacher's mindset plays a crucial role in their ability to overcome these risks, thereby influencing the level of their competence in managing risks during innovative activities.

The mentioned points highlight the **contradiction** between the traditional mindset of teachers in an industrial society and the necessity for teachers to adopt thinking patterns that enable them to navigate the increasing complexity of designing and implementing innovative educational approaches in uncertain and risky environments.

Considering the aforementioned points, **the aim of this study** is to examine the characteristics of risk-oriented thinking among future teachers, with the aim of understanding its significance in fostering their competence in managing risks during their preparation for innovative activities.

Within the framework of the risk-recognizing competence of future teachers, the cognitive component holds significant importance. Alongside motivational and activity components, the cognitive aspect is of particular interest in this study. The cognitive component encompasses knowledge on strategies to address uncertainty in pedagogical decision-making situations as well as experience in minimizing the risks associated with innovation.

Speaking about the cognitive component, it is also important to understand what processes can play a key role in the formation of risk-recognition competence of a future teacher. In this regard, we put forward the **hypothesis** that the development of risk-oriented thinking in bachelors of the direction of training "Pedagogical Education" can become one of the most important conditions for the formation of their risk-recognizing competence in the process of training. for innovation activity.

The research conducted in this study holds important **theoretical and practical significance** as it aims to provide a substantiated understanding of the development of risk-recognizing competence among future teachers. This understanding will enable them to effectively respond to various educational situations during their innovative pedagogical activities. The study also proposes a classification of pedagogical risks, including personal, organizational, and technological risks, which will aid in the introduction of pedagogical innovations.

2. Literature review

Thinking is a complex type of human intellectual activity, the study of which is paid

much attention in psychological and pedagogical science (Rubinstein, 2002; Vygotsky, 1934; Piaget, 1958; Gardner, 2006). In modern conditions, scientists are delving into the study of various types of thinking. Along with such types of thinking as critical thinking (Veiga et al., 2021; Wahyudi et al., 2019), creative thinking, exploratory thinking, synthesizing thinking, etc., risk-oriented thinking is gaining more and more popularity. It should be noted that these types of thinking are considered not only in specific areas of scientific knowledge, they acquire an integrative character.

Risk-oriented thinking has penetrated into pedagogical science from management. The essence of risk-oriented thinking is presented in the version of the ISO 9001–2015 standard. In this interpretation, risk-oriented thinking is considered as the influence of uncertainty on the result of any activity in the form of a negative deviation from the expected result (International, 2015). Considering the fact that pedagogical science pays significant attention to improving the quality of management of innovative educational processes, risk-oriented thinking has become the subject of research by a number of scientists.

E. V. Muravyova, S. G. Dobrotvorskaya, E. I. Alekseeva (Muravyova et al., 2020) consider risk-oriented thinking as a means to understand the processes that can provoke the implementation of risks in a particular type of organization.

E. G. Bardina, V. D. Venzel, I. V. Sechkina, S. V. Yanchij (Bardiba et al., 2020) are of another opinion. They believe that risk-oriented thinking is an active, motivated thought process of a humanistic orientation, and an operation to restructure information about dangerous and emergency situations to reduce risks of a natural, man-made and social nature. Unlike E. V. Muravyova, S. G. Dobrotvorskaya and E. I. Alekseeva, E. G. Bardina considers the concept under study as a condition necessary for the creative growth of students of technical specialties.

M. A. Katanaeva, G. I. Grozovsky, T. A. Lartseva, O. F. Vyacheslavova, I. E. Parfenyeva (Katanaeva et al., 2020) consider risk-oriented thinking in the quality management system and believe that risk-oriented thinking is an approach to the administration and management of an organization based on management decisions taking into account quality risks, in which the emphasis from identification, analysis, assessment and management of risks is shifted to business valuation. As the main function of risk-oriented thinking, they highlight the possibility of preventing errors in the organization's management system to minimize the impact of uncertainty on the degree of compliance of the aggregate characteristics of the control object with the established requirements.

In the process of innovative activity, the teacher needs to pay special attention to the phenomenon of risk, as a structure-forming component of the pedagogical solution. Pedagogical risks enable teachers to consider potential alternatives for the advancement of the educational process and choose appropriate strategies to address pedagogical challenges while minimizing adverse outcomes (Askhadullina, 2016).

Many educators-researched view the teacher's innovative activity in different ways. V. S. Lazarev (Lazarev, 2008), V. A. Slastenin (Slastenin, 2007), D. Thiessen (Thissen et al., 1993) and etc. emphasize that the teacher's innovative activity is a purposeful transformation of everyday educational practice through the creation, distribution, and development of new educational systems or some of their components. The functional purpose of innovation is to transform educational systems. However, it should be noted that transformations do not always have a positive outcome. Any innovation has such a property as uncertainty.

S. U. Kasimov and G. E. Pulatov (Kasimov et al., 2020) believe that the teacher's innovative activity includes the analysis and assessment of innovations, the formulation of goals and concepts for future actions, implementation and revision of this plan, and evaluation of its effectiveness.

The aspects of the teacher's innovative activity identified by scientists (Aleskerov et al., 2021; Nancy et al., 2021) allow us considering this type of activity as a non-linear process aimed at transforming educational systems, subject to the teacher's initiative, creativity and willingness to take risks.

By "risk-oriented thinking of a teacher", we mean the process of assessing risk and designing a program to influence its parameters in order to minimize the possible negative consequences of a pedagogical decision. Thus, it can be assumed that the development of risk-oriented thinking of a future teacher in the process of preparing for professional innovative activity as a fundamental component of readiness for reasonable risk is one of the most important pedagogical conditions for the formation of their risk-recognizing competence in the implementation of pedagogical innovations.

3. Materials and Methods

3.1. Structure of the study

The study used both theoretical and empirical methods of pedagogical research. At the first search and research stage, the initial positions of the research, its problem, goal, objectives, hypothesis, and methods are determined. The main task of this stage was to substantiate the concept of "risk-recognizing competence of a future teacher" in the aspect of innovative activity in education.

At the next stage, in order to determine the structure, content, forms of organization of professional training of the future teacher, and criteria and indicators of the risk-recognizing competence of the future teacher, we used methods such as the study and analysis of advanced pedagogical experience in the formation of future teachers' risk-recognizing competence. At this stage, a survey was also conducted, consisting of a conversation, an interview and a questionnaire.

3.2. Questionnaire Design

In order to identify the willingness of practicing teachers to take risks in innovative activities and the peculiarities of their thinking in risk situations, we conducted a survey among teachers in a number of regions of the Russian Federation (459 teachers in total). As a diagnostic tool, we used the questionnaire of A. G. Shmeleva "Study of the inclination to risk" (Shmelev, 2002).

The methodology employed aims to assess an individual's inclination towards risk-taking. The purpose of analyzing the collected data is to derive a measure of the individual's risk appetite as a personal characteristic. The data obtained testified to the extreme urgency of the problem of the teacher's readiness for risks in innovative activities and contributed to the emergence of questions related to the degree of readiness of graduates of pedagogical universities in this area of activity. In this regard, the next stage of the study was to develop an author's questionnaire to determine the readiness of future teachers to take risks in innovation.

3.3. Validation experiment

3.3.1. Sample Selection

In the first survey using the method of A. G. Shmelev, 459 teachers of secondary schools in Russia took part (secondary schools № 6 in Nizhnekamsk; № 1, 3, 7, in Mendeleevsk; Gymnasium № 1 and secondary schools № 3, 9, 10 in Elabuga; № 4, 6, 10 in Naberezhnye Chelny; Kukmorskaya Gymnasium № . 1; secondary general education schools № 3, 8, 10 in Nurlat; secondary general education schools of Chishma, Kandry, Tuimazy villages, Vyatskiye Polyany, Malmyzh, Mozhga).

The questionnaire to identify the readiness of students of pedagogical specialties of higher education institutions to risks in innovation activities was attended by the following participants: 468 students of the direction of training "Pedagogical education" (Elabuga Institute (EI) and the Institute of Psychology and Education of the Kazan Federal University (KFU), Glazov State Pedagogical Institute, Novgorod State University, Crimean Federal University, Saratov State University, Volga State Social and Humanitarian Academy, Tver State University, Tobolsk Pedagogical Institute, Tomsk State Pedagogical University, Pedagogical Institute of V. G. Belinsky of Penza State University, Pskov State University, Sterlitamak Branch of Bashkir State University, Naberezhnye Chelny State Pedagogical University).

3.3.2. Forming experiment

The fourth formative stage of the experimental work included an experimental test of pedagogical conditions, one of which was the development of risk-oriented thinking of stu-

dents of the direction of training "Pedagogical education". Students took part in various innovative educational projects of the EI KFU: "Children's University", "New Generation Teacher".

A special event where students could get acquainted with advanced pedagogical experience in innovative activities was the participation of students in the Summer Pedagogical School within the framework of the International Festival of School Teachers.

A unique project aimed at developing a model for improving the quality of education in a general education school, including improving the professional skills of existing teachers, was the "Teacher's Assistant" project.

Students have the opportunity to discuss and share experiences in minimizing risks in innovation through participation in various conferences. Great potential for this is provided to students during their participation in the All-Russian Student Scientific and Practical Conference, as "Risk Management in the Economy of Sustainable Development".

4. Results

4.1. Teachers' questionnaire results

According to the results of the survey, it was revealed that practicing teachers are actively involved in the innovative activities of schools. But at the same time, they note a number of reasons that explain their low innovative activity. In addition, based on the results of the questionnaire, we can rank the types of risks of the teacher's innovative activity according to their degree of significance. In the 1st place was the risk of mismatch. The 2nd place was given by the respondents to the risk of respon-

Table 1. Results of the survey of practicing teachers

Questions	Answers %
1) The innovative potential of the school:	
high	32 %
middle	64 %
low	4 %
2) Reasons for the low innovative activity of teachers:	
increase in the psycho-emotional load on teachers during the introduction of innovations in the educational process	26 %
Teachers' working conditions	13 %
insufficient mastering by teachers of a set of professional competencies	12 %
undeveloped regulations of the relationship between the parties participating in the innovation process	11 %
lack of interest of teachers in the development and implementation of pedagogical innovations due to the risk of unsuccessful outcome of these activities	11 %
lack or low level of preparedness of teaching staff	11 %
lack of prestige of the teaching profession	10 %
remoteness of the school from the center	3 %
the absence of any reason	3 %
3) Reasons interfering with engaging in innovative activities:	
mismatch risks	11 %
risks of liability	11 %
dispositional risks	10 %
physical risks	10 %
personal risks	10 %
strategic risks	9 %

sibility for the chosen solution. Three types of risk came in the 3rd place: dispositional, physical and personal risks. The last place occupied by strategic risks.

All of the above (Table 1), allows us talking about psychological barriers in the process of development of innovation activity. It was found out that psychological barriers that prevent teachers from mastering and disseminating pedagogical innovations create risks of falsifications and imitations of these innovations as a response to emerging contradictions. It is found that these barriers are not a random manifestation. In significant cases, they arise since the previous innovations did not bring significant updates in the education system, remained incomplete due to their ineffectiveness.

4.2. Results of the students' questionnaire

As a result of processing and interpretation of respondents' answers, it was determined that only 21 % of students follow the advanced

Table 2. Results of the questionnaire survey of students

Questions	Answers %
1) students understand innovation as the search for ideal methods and programs for implementation in the educational process	64 %
2) pedagogical innovations contribute to social development, subject to careful analysis and assessment of the stages of implementation	68 %
3) innovation is a big risk	72 %
4) the teacher's desire to stay in the "comfort zone" hinders the introduction of pedagogical innovations	69 %
5) the introduction of pedagogical innovations is hampered by a sense of uncertainty in the situation of the choice of pedagogical methods	71 %
6) risks in innovation:	
unpredictability of results, probability of losses	74 %
decrease in the cognitive activity of students, the quality of education, social prestige, an increase in the level of conflict in interpersonal relationships with colleagues, students and their parents, etc.	79 %
7) interest in innovative teaching activities:	
interested	66 %
not interested	17 %
not sure if they are interested	16 %
indifferent	1 %
8) have sufficient knowledge, skills and abilities necessary for the successful implementation of pedagogical innovations	81 %
9) to overcome uncertainty when introducing pedagogical innovations, you need to be able to identify and analyze risk factors and predict further actions.	61 %
10) formation of risk-recognizing competence among future teachers will help to minimize risks in the process of introducing pedagogical innovations	60 %
11) formation of risk-recognizing competence in future teachers will contribute to career growth	63 %
12) effective education of the risk-recognizing competence of the future teacher is facilitated by:	
independent selection of literature on the problems of pedagogical risks	62 %
educational games	71 %
mastering the skills of constructing an algorithm of actions in the prevention of pedagogical risks	73 %
attracting students to the implementation of educational projects of the EI KFU	83 %

pedagogical experience, but they do not seek to implement it in the practice of their activities; 62 % of respondents do not have knowledge about the trends of changes in the educational needs of society; 56 % do not know what an individual style of innovative activity of a teacher means. Among students, 39 % of the participants of the pedagogical experiment are engaged in self-education; 27 % of respondents organize cooperation with scientific advisors, teacher-innovators, tutors; 12 % can describe the perspective of their own innovative activity as a future teacher and predict it. In general, 46 % of students are open to the new, which indicates an acceptable level of receptivity to innovations.

Based on the results (Table 2) of the questioning of students, it can be assumed that they understand the conjugation of the teacher's innovative activity with a large number of risks. Students also recognize that they can be prepared for these risks if the right conditions are created in the process of preparing them for innovation.

4.3. Interpretation of the results of a validation experiment

Based on the findings of the survey conducted among active teachers, we can form an opinion regarding the prevalence of a trend in Russia where teachers are inclined to incorporate pedagogical innovations into the teaching and learning processes of secondary educational institutions. More than 1/10 of the surveyed respondents emphasize the need to prepare future teachers for innovative activities, since they have already comprehended the importance of innovative processes in education as the most important condition for the development of society. However, despite this, teachers demonstrate an extremely low level of formation of motivational readiness for the introduction of pedagogical innovations.

Assumptions about a low level of formation of teachers' motivational readiness to introduce pedagogical innovations were confirmed in the course of identifying the reasons for their low innovative activity. Of the eight reasons we proposed, the most popular was the reason associated with an increase in the psycho-emotional load on teachers in the course of introducing innovations into the educational process. This reason reflects the emotional-volitional regulation of the state of teachers in the process of innovative activity, which manifests itself in them in the form of excessive stress, the emergence of negative emotions and depressive states. The maximum effort of willpower by teachers in pedagogical innovation often leads to risks such as professional and personal burnout, since not all of them are able to withstand emotional and volitional stress.

4.4. Formative experiment

In order to form risk-oriented thinking of future teachers, students were given the opportunity to participate in various innovative projects at the EI KFU.

The project "Children's University" (Detskiy, 2024) involves non-standard activities for schoolchildren, conducted by teachers of the university. In the process of preparing and implementing classes, teachers involve students. The purpose of such interaction of teachers with students is that students are faced with the need to master and introduce innovations in unfamiliar conditions.

Another innovative educational project within the priority area of KFU "Teacher of the XXI century" (Uchitel', 2024) is the program of additional education of EI KFU "Teacher of the new generation". The participation of students in this project is accompanied by weekly classes, trainings aimed at increasing the psychological and methodological readiness for professional activity and the formation of motivation of future teachers for innovative activities. Students are faced with situations of uncertainty and ambiguity which in turn act as a powerful catalyst for the development of their risk-oriented thinking.

Another event that increases the effectiveness of the development of risk-oriented thinking of students is the Summer Pedagogical School, held within the framework of the International Festival of School Teachers of the EI KFU (Letnyaya, 2024). The specificity of the school is to create a platform for joint work of EI KFU students with students of other

higher educational organizations. Taking part in the Summer Pedagogical School, students find themselves in a specially created environment that allows them increasing the level of development of students' risk-oriented thinking, which contributes to the formation of their risk-recognizing competence.

Thanks to the inclusion in the structure of the EI KFU of the general educational organization of secondary general education "University School" the Institute managed to implement another unique project of our university – the project "Teacher's Assistant" (Proyekt, 2024). This idea made it possible to closely integrate higher and secondary education: a classroom teacher and pupils interact with students of the pedagogical directions of training of EI KFU. In our opinion, the direct participation of students in the project "Teacher's Assistant" is one of the conditions for the development of the personnel resource of an educational organization due to the fact that such a model allows implementing a mentoring system ("teacher-practitioner – future teacher"). It expands the opportunities for students' professional development in educational practice (Jowkar et al., 2014; Garcia-Crespo et al., 2021, Garcia-Crespo et al., 2019). By participating in this project, students have the opportunity to cultivate risk-oriented thinking within the immediate educational setting. Through evaluating their own experiences in implementing pedagogical innovations, they can identify mechanisms for effectively managing these risks and minimizing any adverse outcomes associated with innovation.

In addition to the projects presented, on the basis of the EI KFU, the annual All-Russian student scientific and practical conference "Risk Management in the Economy of Sustainable Development" is held. In contrast to pedagogically focused conferences, this conference provides an opportunity for future teachers to delve into the methodological aspects of risks in innovative pedagogical activities. Since the main professional educational program at EI KFU lacks specialized courses on pedagogical risks, participating in this conference allows students to use and apply in practice knowledge from other fields of science in minimizing pedagogical risks in the process of mastering and introducing innovations (Khayrullin, 2012).

5. Discussions

Taking into account the opinion of I. G. Dolina and O. V. Kushnareva (Dolina et al., 2020), it should be established that one of the directions of work on the formation of risk competence of future teachers is the implementation of pedagogical diagnostics aimed at identifying the levels of development of risk-oriented thinking, assessing the level of formation of indicators of risk competence consistent with the competence approach, as well as the study of personal predictors of risk behavior of students (Chalikova, 2020).

Results of the questionnaire survey of practicing teachers indicate the prevalence of a low level of formation of teachers' motivational readiness for innovative activities as the most important condition for effective management of the innovative pedagogical process, which requires decision-making in the choice of justified actions in the development and implementation of pedagogical innovations in order to reduce the level of its negative impact on subjects of the educational environment. If we take into account those scientists (Deci et al., 2008; Gordeyeva, 2014) are of the opinion that motivation is the most important mechanism forcing a person to include mental activity, then it is reasonable to assume that an unmotivated teacher does not have risk-oriented thinking. Accordingly, the level of formation of risk-recognizing competence will also be low.

As noted by E. V. Savenkova (Savenkova, 2016), the improvement of students' risk competence in pedagogical university is influenced by the inclusion of educational programs that give students the opportunity to consistently study risk management in education. It is also important, according to T. Mikheeva and M. Elagina (Mikheeva et al., 2020) to prepare future teachers for psychological readiness for the risk of innovative activities of teachers.

As the goals of the formation of risk-recognizing competence of the future teacher, students note the need to develop their ability to solve pedagogical problems in situations of

uncertainty. They also believe it is important for them to master risk prevention techniques. This gives us reason to believe that students have fairly stable motives to master the mechanisms of risk-oriented thinking. This is also confirmed by the results of the survey, when most of the students surveyed understand the importance of participating in innovative projects of the university.

6. Conclusions

In this study, the risk-oriented thinking of the teacher is considered as a process of functioning of the teacher's consciousness, aimed at reducing the likelihood of an unfavorable outcome of the results of the teacher's innovative activity.

We consider it expedient to promote the development of risk-oriented thinking in future teachers at the stage of their professional preparation for innovative activities. This will allow students enrolled in the field of "Pedagogical Education" to show a positive attitude towards innovation.

The active participation of students in innovative projects of educational organizations is an effective way to develop risk-oriented thinking in future teachers. The obtained results of the study are a concretization of the initial hypothetical provisions and are conceptually interrelated.

The study's novelty lies in its primary focus on the development of risk-oriented thinking among future teachers as a pivotal factor in shaping their risk-recognizing competence. While previous research may have centered on different aspects of teacher education, this study highlights the significance of nurturing future teachers' capacity to evaluate and handle risks within the educational setting. This approach enables a more effective preparation of teachers to navigate complex and unforeseen situations, ultimately fostering their expertise as leading professionals in their field.

References

Waller R., Lemoine P., Mense E., Garretson Ch., Richardson M. Global Higher Education in a VUCA World: Concerns and Projections. In: *Journal of Education and Development*, 2019, n. pag.

Hadar L. L., Ergas O., Alpert B., Ariav T. Rethinking teacher education in a VUCA world: student teachers' social-emotional competencies during the Covid-19 crisis. In: *European Journal of Teacher Education*, 2020, 43(4), 573–586.

Graça V., Quadros-Flores P., Ramos A. The Challenges of Initial Teacher Training. In: *Int. J. Emerg. Technol. Learn*., 2021, 16(18), 85–96.

DeCaroli M.E., Sagone E. Professional Self Representation and Risk of Burnout in School Teachers. In: *Procedia – Social and Behavioral Sciences*, 2021, 46, 5509–5515.

Dallat C., Salmon P. M., Goode N. All about the Teacher, the Rain and the Backpack: The Lack of a Systems Approach to Risk Assessment in School Outdoor Education Programs. In: *Procedia Manufacturing*, 2021, 3, 1157–1164.

Rubinshteyn S. L. *Osnovy obshchey psikhologii [Fundamentals of General Psychology]*. Saint Petersburg, Piter, 2002. 720.

Vygotskiy L. S. *Myshleniye i rech': psikhologicheskiye issledovaniya [Thinking and speech: psychological research]*. Moskva – Leningrad, Gosudarstvennoye sotsial'no-ekonomicheskoye izdatel'stvo, 1934. 324.

Piaget J., Inhelder B. *The Growth of Logical Thinking from Childhood to Adolescence*. New York: Basic Books, 1958. 356.

Gardner H. *Multiple intelligences: New horizons (Completely rev. and updated.)*. New York, Basic Books, 2006. 320.

Veiga F. J.M., Andrade A. M.V. Critical Success Factors in Accepting Technology in the Classroom. In: *Int. J. Emerg. Technol. Learn*., 2021, 16(18), 4–22.

Wahyudi W., Verawati N. N.S.P., Ayub S., and Prayogi S. The Effect of Scientific Creativity in Inquiry Learning to Promote Critical Thinking Ability of Prospective Teachers. In: *Int. J. Emerg. Technol. Learn*., 2019, 14(14), 122–131.

International Organization for Standardization. Quality Management Systems – Requirements (ISO standard no. 9001:2015). Available at: https://www.iso.org/obp/ui/#iso: std: iso:9001: ed-5: v1: en (accessed 5 may 2024).

Muravyova, E. Pedagogical Conditions for The Formation of Risk Thinking. In: *European Proceedings of Social and Behavioural Sciences,* 2020, 738–744.

Bardina E. G., Venzel V. D., Sechkina I. V., Yanchij S. V. Humanism and creative activity as the dominant installation in risk-based thinking development. In: *The European Proceedings of Social and Behavioural Sciences*, 2020, 1358–1365.

Katanaeva M. A., Grozovsky G. I., Lartseva, T.A., Vyacheslavova O. F., Parfanyeva I. E. Risk-oriented thinking in the quality management system of an organization. In: *Revista Inclusiones*, 2020, 7, 310–317.

Askhadullina N. N. Sushchnostnaya kharakteristika riskologicheskoy kompetentsii budushchego uchitelya [Essential characteristics of the riskological competence of the future teacher]. In: *Problems of modern pedagogical education. Series: Pedagogy and Psychology*, 2016, 52(3), 8–15.

Lazarev V. S. *Upravleniye innovatsiyami v shkole [Management of innovations in school].* Moscow, Tsentr pedagogicheskogo obrazovaniya, 2008. 352.

Slastenin V. A., Podimova L. S. Gotovnost' pedagoga k innovatsionnoy deyatel'nosti [The teacher's readiness for innovative activity]. In*: Pedagogicheskaya nauka i obrazovaniye [Pedagogical science and education]*, 2007, 1, 32–37.

Thiessen D., Kilcher A. *Innovations in Teacher Education A Review of Recent Literature*. Ontario. Canada, Ministry of Education and Training, 1993. 306.

Kasimov S. U., Pulatov G. E. Teacher innovative activity in teaching special subjects. In: *Novateur publications. International journal of innovations in engineering research and technology*, 2020, 7(5), 282–284.

Aleskerov F., Egorova L., Gokhberg L., Myachin A., Sagieva G. Pattern Analysis in the Study of Science, Education and Innovative Activity in Russian Regions. In: *Procedia Computer Science*, 2021, 17. 687–694.

Nancy W., Parimala A., MerlinLivingston M. Advanced Teaching Pedagogy as Innovative Approach in Modern Education System. In: *Procedia Computer Science*, 2021, 172, 382–388.

Shmelev A. G. *Psikhodiagnostika lichnostnykh chert [Psychodiagnostics of personality traits].* Saint Petersburg, Rech, 2002. 480.

Abramova I. G. *Pedagogicheskaya riskologiya: monografiya [Pedagogical riskology: monograph].* Saint Peterburg, Obrazovaniye, 1995, 92.

Deci E. L., Ryan R. M. Self-determination theory: A macrotheory of human motivation, development and health. In: *Canadian Psychology*, 2008, 49, 182–185.

Gordeyeva T. O. Bazovyye tipy motivatsii deyatel'nosti: potrebnostnaya model' [Basic types of activity motivation: a need-based model]. *In: Vestnik Moskovskogo universiteta [Bulletin of Moscow University]*, 2014, 3, 63–78.

Detskiy universitet [Children's University]. Available at: https://kpfu.ru/elabuga/projects/childuniversity (accessed 5 February 2024).

Uchitel' novogo pokoleniya [New generation teacher]. Available at: https://kpfu.ru/elabuga/projects/new-generation-teacher (accessed 5 February 2024).

Letnyaya pedagogicheskaya shkola [Summer teacher training school]. Available at: https://kpfu.ru/elabuga/edusummerschool (accessed 5 February 2024).

Proyekt "Assistent uchitelya" startoval v Yelabuzhskom institute KFU [The "Teacher's Assistant" project was launched at the Yelabuga Institute of the Kazan Federal University]. Available at: https://kpfu.ru/elabuga/school/proekt-39assistent-uchitelya39-startoval-v-394247.html (accessed 5 February 2024).

Jowkar B., Kojuri J., Kohoulat N., Hayat A. A. Academic resilience in education: the role of achievement goal orientations. In: *Journal of advances in medical education & professionalism,* 2014, 2(1), 33–38.

García-Crespo F.J., Fernández-Alonso R., Muñiz J. Academic resilience in European countries: The role of teachers, families, and student profiles. In: *PLoS ONE*, 2021, 16(7), e0253409.

García-Crespo F., Galián B., Fernández-Alonso R., Muñiz J. Educational Resilience in Reading Comprehension: Determinant factors in PIRLS-Europe. In: *Revista de Educación (Madrid)*, 2019, 3, 71–96.

Khayrullin R. R. Kontseptsiya razvitiya DOL «Orlonok»: osnovnyye zadachi i rezul'taty vnedreniya [The concept of development of the Orlyonok hospital: the main tasks and results of implementation]. In: *Risk-menedzhment v ekonomike ustoychivogo razvitiya: materialy Vserossiyskoy nauchno-prakticheskoy konferentsii studentov i molodykh uchenykh,* 2012.

Dolina I. G., Kushnareva O. V. Diagnostika riskologicheskoy kompetentnosti studentov politekhnicheskogo profilya [Diagnostics of riskological competency of politechnical students]. In: *Vestnik PGPPU [Bulletin of PGHPU]*, 2020, 22–34.

Chalikova O. S. Issledovaniye lichnostnykh prediktorov riskovannogo povedeniya studentov [Study of Personal Predictors of Students' Risk Behavior], In: *Izvestiya Ural'skogo federal'nogo universiteta. [News of the Ural Federal University]*, 2020, 26, 4(201), 124–133.

Savenkova E. A. Forming riskological competency in the realization of master's programs in pedagogical HEI, In: *Educational Technologies*, 2016, 1, 43–56.

Mikheeva T., Elagina M. Psychological readiness for the risk of innovative activities of teachers, In: *E 3S Web of Conferences*, 2020, 210(18029), 1–6.