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CONTENT

Innovative Approaches and Practices in Modern Education

Psychological and Pedagogical Problems of Professional Development of Education Specialists

General Information

About the Journal

Abai journal of Pedagogy and Psychology is a peer-reviewed scientific and methodological journal founded in 2009 by Abai Kazakh National Pedagogical University. The journal focuses on key issues in education at all levels, from early childhood to higher education, and serves as a platform for academic discourse, research dissemination, and professional development in the fields of pedagogy and psychology.

Aims and Scope

The journal publishes original research articles, theoretical analyses, and methodological developments in the following areas:

1. Innovative Approaches and Practices in Modern Education;
2. Psychological and Pedagogical Problems of Professional Development of Education Specialists.

Editorial Strategy
The editorial board adheres to the following principles:

3. Impartial and objective peer-review process;
4. High standards of scientific rigor and methodological accuracy;
5. Collective decision-making based on expert consensus;
6. Efficient and transparent communication with authors;
7. Full respect for intellectual property rights;
8. Strict adherence to the publication schedule;
9. Limitation of publication frequency to a maximum of two articles per author per calendar year.

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Development of Social Intelligence of Students on the Basis of Integration of Subject Knowledge

Abstract

Introduction. The article deals with the problem of formation of social intelligence of high school students through the met educational process with the use of active forms and methods of teaching. The authors substantiate the relevance of the study of students' social intelligence development within the framework of their learning activities as one of the key socio-psychological components of personality formation at school age. *Methodology and Methods*. The stages of the experiment to study the level of students' anxiety (social adaptation) as one of the components of social intelligence in the process of teaching adolescents are described. A total of 200 high school students participated in the study. During the experiment, quantitative research methods were used. The establishing and control stages of the experiment are based on the method of determining the social anxiety of students James G. Phillips. The formative stage of the experiment is based on the complex integrative developmental program, implemented in the natural conditions of the school environment. *Results*. During the study, it was found that the integration of subject knowledge and active teaching methods presented in the complex integrative developmental program, has a positive effect on the reduction of social anxiety among students, which contributes to the development of social intelligence of students. *Scientific novelty*. It has been experimentally proven that the integration of subject knowledge and active teaching methods within a comprehensive program contributes to reducing social anxiety and developing social intelligence in students. *Practical significance*. The distinctive feature of the complex integrative developmental program is the integration of subject knowledge and active forms and methods of teaching. The developed program can be implemented in school practice to develop social intelligence in students.

Keywords: social intelligence; social anxiety, subject knowledge; integrative program, experiment.

Introduction. In the conditions of dynamic socio-economic and technological changes in modern society, the formation of student's competencies that ensure their successful adaptation in society, is of particular importance. One of the key factors of successful personal adaptation is a high level of formed social intelligence. The development of social intelligence among students is one of the most important objectives of the modern education system. This process contributes to the formation of a competent, adaptive and psychologically healthy personality capable of successful interaction in society. To achieve this goal, it is necessary to pay attention to the development of the following key components of social intelligence: empathy, self-regulation skills, social adaptation, communication skills and interpersonal interaction skills.

The purpose of the study is to experimentally investigate the impact of subject knowledge integration on the development of social intelligence of high school students. The main research question was as follows: «Does the

integration of subject knowledge have an impact on the development of social intelligence, using the example of anxiety reduction in high school students?».

Social intelligence is a part of human self-actualization and an important indicator of social and individual development of personality (Saraeva et al., 2013). Foreign researchers (Aryani et al., 2024) note that social intelligence is the capacity, capability, or ability to build relationships with others effectively.

In traditional teaching, the emphasis is mainly on the cognitive development of students and mastery of subject knowledge, while social intelligence, being an important component of personality, often remains outside the targeted pedagogical influence. Meanwhile, studies in psychology and pedagogy (Stern & Spoerl, 1938; Davis et al., 2011; Goýlman, 2022) emphasize that a high level of social intelligence is positively correlated with academic performance, professional success, and the quality of social interactions.

In the modern world, the approach that integrates academic learning (learning of individual subjects) with the development of social-emotional skills among students is becoming more popular (Atkins et al., 2023; Pratiwi et al., 2024; Moreno et al., 2024; Liu, 2024). This is realized through the integration of subject knowledge and social-emotional learning, which allows the formation of not only academic but also communicative, empathic and reflective skills.

In traditional teaching, the result is the indicators of mastered knowledge, however, nowadays it is not the sum of acquired knowledge that is important, but the preparation for future challenges. All this characterizes the level of formation of universal learning competencies in the learners. One of the indicators of meta-subject educational results is the formed skill to integrate the acquired knowledge, which is possible with the application of certain teaching strategies, methods and forms of presentation of material with a wide use of meta-subject links.

As a result of the study of research on the integration of subject content, the authors have developed the complex integrative developmental program (hereinafter - CIDP), aimed at the development of all aspects of social intelligence (empathy, self-regulation, social adaptation, communication skills, interpersonal relations) through the meta-subjectivity of the educational process. The proposed CIDP integrates the subject content of education through selected teaching methods, forms of organization of learning activities of students and developed methodological support. Since the development of social intelligence in schoolchildren is most effectively achieved through their learning activities, the priority areas of learning activities with the greatest potential for self-realization of students were selected (Kırıchenko, 2009). These are personal development and education in the course of extracurricular activities, academic work, research work, and project activities.

Materials and Methods. The methodological approaches of the study are based on the theory of Salovey & Mayer (1990), which defines the relationship between emotional and social intelligence, resulting in the ability of learners to use emotional information in their thinking and activities.

Method of research. Quantitative research methods were used to test the impact of subject content analysis on the development of social intelligence through a reduction in student anxiety. A pre-test/post-test experiment with a control group was conducted in a natural school environment. At the ascertaining and control stages, J.G. Phillips' method for determining school (social) anxiety was used. The formative stage consisted of the implementation of a comprehensive integrative development program (CIDP), a distinctive feature of which is the targeted integration of subject knowledge and active forms and methods of teaching.

The study uses an author's integrative-motivational-emotional model based on the ideas of the motivational framework «Self-Determination Theory» (Deci & Ryan, 2012) and the theory of learning emotions «Control-Value Theory» (Pekrun, 2006). In the study, interdisciplinary integration and active teaching methods form an autonomous-supportive environment (autonomy, competence, con-

nectedness), strengthen subjective control and the value of learning activities. As a result, students' academic anxiety as an indicator of social adaptation decreases and their social and emotional competencies are strengthened.

A cluster sample was used in the study. Two hundred students from a general education school and a lyceum participated in the experiment. Parallel classes of 8th and 9th grades were selected in two schools of Pavlodar. Experimental (n = 102) and control (n = 98) groups were formed, comparable in terms of age, academic performance, and level of socialization. Data on respondents are presented in Table 1.

Table 1. _Representative sample data_

Group	Number of students by groups	School	Grade	Number of students by grades
experimental	102	SCS	8A	26
			9A	25
		School-lyceum	8B	25
			9C	26
control	98	SCS	8B	24
			9B	25
		School-lyceum	8C	24
			9B	25

The control group was taught according to the traditional program, while the experimental group was taught according to the CIDP. Teaching in schools was conducted according to a single State Standard for Secondary Education, which ensured similarity of conditions and representativeness of the sample.

To assess school anxiety, James G. Phillips' Method for identifying the level of school anxiety in students, adapted and translated into Kazakh, was used, which includes 58 statements rated on a 5-point Likert scale (Egorenko et al., 2023). The survey of students in the experimental and control groups was conducted before and after the implementation of the CIDP. Before taking the survey, respondents were asked to read and sign an informed consent form with the right to choose or refuse to participate in the experiment.

The research data was collected online. The indicators were represented in the categories «high/medium/low» anxiety levels. Standardized anxiety diagnostics were performed in the EG and CG. The results are presented in a summary table and a diagram of average values. After the implementation of the CIDP in the EG and a comparable period of training in the CG, a repeat diagnosis was performed using Phillips and a comparison of anxiety level distributions was made.

Descriptive statistics were used, with responses presented as a percentage distribution. This made it possible to compare the results between schools and groups of students to identify differences in the development of social anxiety, as well as to identify key patterns and frequencies in student responses.

Results. The aim of the empirical study is the impact of integrating subject knowledge and pedagogical methods on the level of development of social intelligence of learners.

The ascertaining stage consisted of diagnosing the initial level of learner's anxiety according to the James G. Phillips method (Egorenko et al., 2023). Standardized tests were used for preliminary testing of students. The diagnostic results are presented in Figure 1 and Table 2.

– in both groups a significant number of students (on average about 50%) have an average level of anxiety, which requires preventive work;

– a high level of anxiety was found in an average of 30% of EG students;

– the main factors of anxiety are related to fear of evaluation, lack of support from teachers, difficulties in relationships with peers.

The results of the ascertaining stage of the experiment revealed the aspects requiring

attention for the development of emotional intelligence fear of the situation of knowledge testing, non-compliance with the expectations of others and self-expression. This made it possible to develop the CIDP aimed at the development of emotional intelligence of students. CIDP was developed on the basis of the state educational standard of secondary education, taking into account the achievement of learning objectives in subjects and approved by the methodological council of the secondary education organization of Pavlodar city.
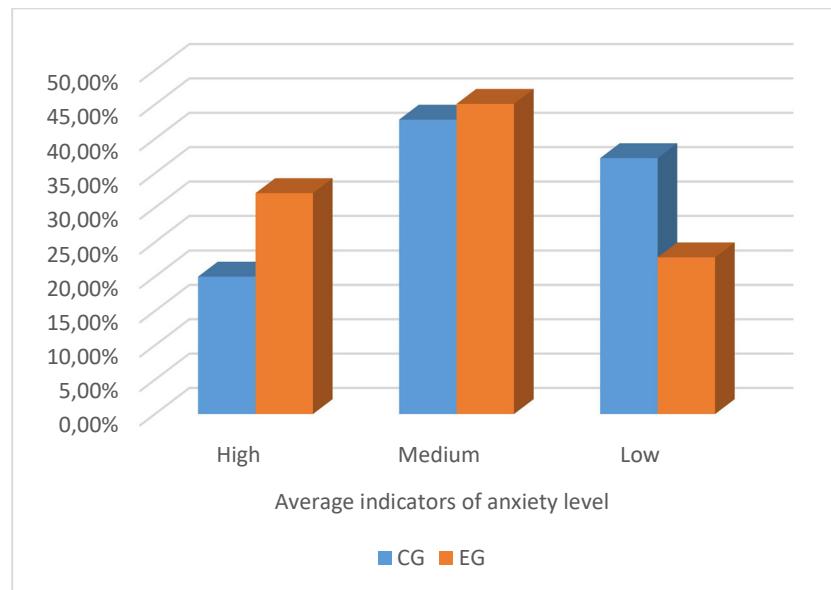
Figure 1: Comparative indicators of anxiety level (social adaptation) according to the mean

Table 2. *School anxiety level (social adaptation)*

Indicators	Level	CG	EG
Average indicators of anxiety level	High	20%	32,1%
	Medium	42,8%	45,1%
	Low	37,2%	22,8%

The formative stage of the experiment was based on the application of the CIDP aimed at the development of components of social intelligence (empathy, self-regulation, social adaptation, communication skills and interpersonal skills) through the meta-educational process and with the use of active forms and methods of teaching (Figure 2).
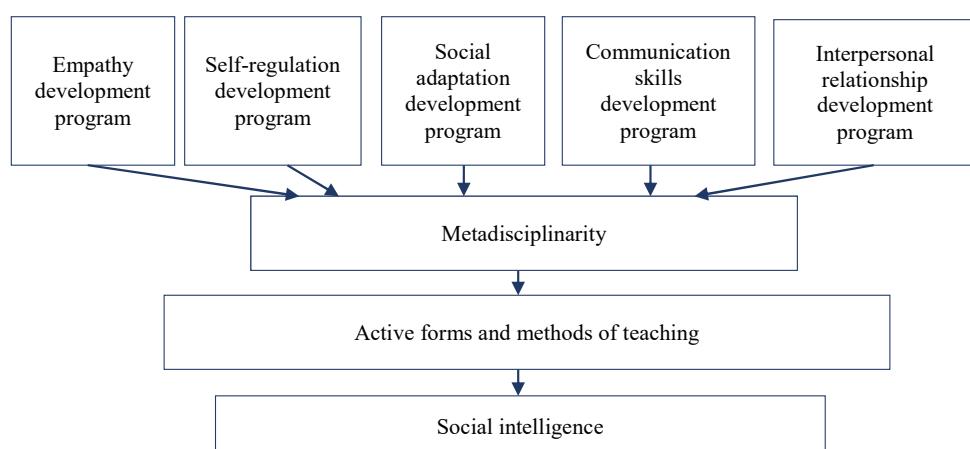
Figure 2: Complex integrative developmental program

In CIDP, the integration of subject knowledge in the educational process is a purposeful interrelation between structural components of different subjects and is based on teaching methods such as:

– _Interdisciplinary research projects_ that integrate theoretical frameworks and methodological approaches to different subjects to solve complex problems or study multifaceted phenomena. Projects promote collaborative learning and encourage students to consider problems from different perspectives;

– _Essay writing_ is a method that synthesizes linguistic competence with scientific literacy to improve both the understanding of subject content and the ability to articulate and communicate effectively with audiences;

– _Artistic representation of objects and phenomena_, where the integration of, for example, history with the visual arts allows students to gain a deeper understanding of the historical era, visualizing of key events and figure. This approach develops student's historical knowledge and creativity;

– _Game forms of learning_ (quests, puzzles, role-playing games related to the educational material, etc.) with elements of rewards for successful completion of tasks;

– _Group trainings and individual conversations_ aimed at developing empathy, communication and teamwork skills, as well as relieving high levels of anxiety.

The contents of the CIDP are displayed in Table 3.

Table 3. _Social adaptation program_

Topic and activity	Goal	Expected result
«Know thyself»: getting to know each other through play	Relieving tension, building confidence	Improvement of social interaction
«Mind Games»: math problems in teams	Development of cognitive confidence	Reducing the fear of making mistakes
«Emotions in learning»: training on expressing emotions	Awareness of emotions, reduction of emotional tension	Building confidence in open expression
Interdisciplinary quest	Combining learning knowledge in a game format	Increasing confidence through success in the game
«Are we good listeners?»: group work	Development of active listening skills	Improving understanding
Practical work: application of knowledge in the lesson	Linking theory with practice	Increasing interest in subjects
«My superpower»: summarizing the results	Reflection and discussion of achievements	Building a positive self-perception
Closing meeting: a common game	Strengthening cooperation skills	Creating a positive interaction experience

Are examples of correction asks:

«Integrated quest» (25 minutes)

The class is divided into 4 groups. Each group performs a task related to one of the academic subjects:

Example samples of tasks:

1) _Geography_: develop a tourist itinerary of an excursion to one of the regions of Kazakhstan, indicating natural sights, climatic conditions and necessary safety measures;

2) _Algebra_: solve a logical problem using equations - how many different combinations of prizes, treats and gifts can be bought for a school holiday if a limited amount of money is allocated?

3) _Physics_: devise and describe a simple experiment that demonstrates how friction works in everyday life (e.g., in sports or transportation);

4) _History_: make a historical quest – an interactive game for classmates based on the

events of one of the key periods (e.g. the Great Patriotic War (World War II), the Golden Horde or the reign of Abylai Khan).

Upon completion, each team presents the results, and the rest of the class participates in the discussion, asking questions and suggesting other options for developing the assignment.

Questions for discussion:

– Which assignments sparked the most interest and why?

– Were there times when you felt anxious?

– Which knowledge or skills will be useful for you in your life?

The class creates conditions for reducing anxiety through engagement, play and an interdisciplinary approach.

The tasks demonstrate the practical value of knowledge and help students to feel confident through cooperation and success. These assignments promote a holistic view of the world, critical thinking, communication

and research skills. At the same time, playing together makes the learning process emotionally supportive and safe.

Increasing self-confidence through successful completion of learning tasks and participation in-group activities helps students to overcome their fears and strengthen their positive attitude towards learning. The expected long-term effects include improved learning outcomes, increased school engagement and a decrease in the number of students with high levels of anxiety.

A repeated assessment of school adaptation level (specifically anxiety), using James G. Phillips methodology after the implementation of the comprehensive program, demonstrated that integration of specialized methods to reduce anxiety positively affects students' behaviour and emotional well-being. This, is turn, helps create favourable conditions for the development of social intelligence (Figure 3, Table 4).
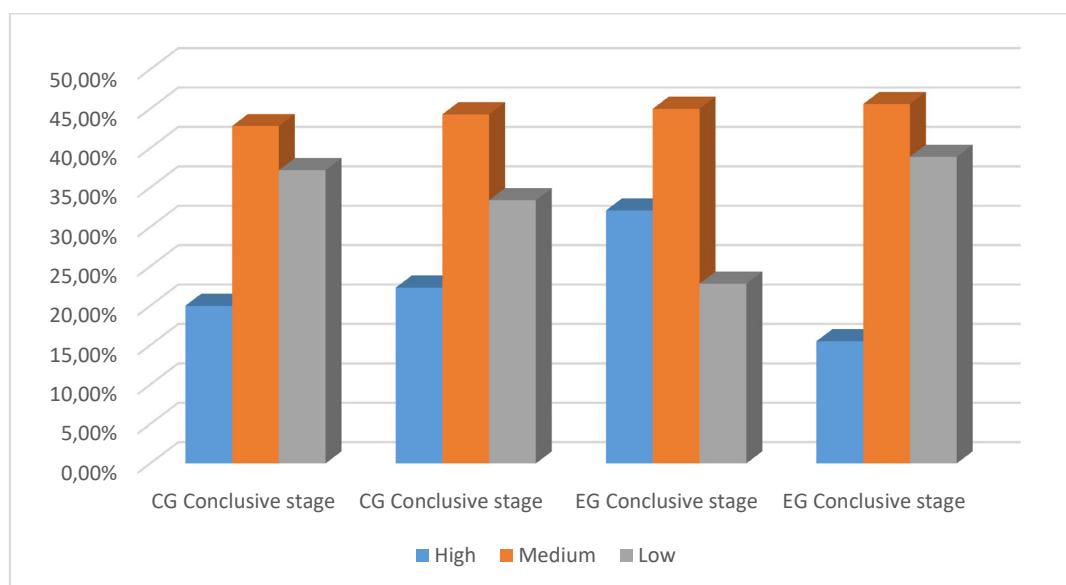
Figure 3: Comparative measures of anxiety (social adjustment) by mean post-CIDP scores

Table 4. *Indicators of changes in the level of school anxiety (social adaptation) after undergoing CIDP*

Data	Level	CG before CIDP	CG after CIDP	EG before CIDP	EG before CIDP
Average anxiety level indicators	High	20%	22,3%	32,1%	15,5%
	Medium	42,8%	44,3%	45%	45,6%
	Low	37,2%	33,4%	22,8%	38,9%

Comparative analysis of the results of repeated diagnostics of respondents showed that the percentage of students with high level of anxiety in EG decreased by 16.6% (from 32.1% to 15.5%), while in CG - increased by 2% (from 20% to 22.3%). At the same time, the percentage of schoolchildren with low level of anxiety increased by 16.1% (from 22.8% to 38.9%) in EG respondents, while in KG the percentage of schoolchildren with low level of anxiety decreased by 3.8% (from 37.2% to 33.4%). Thus, EG students began to participate more actively in-group work and demonstrate self-confidence.

Discussion. In developing the study design, the authors were guided by Kreijkes & Greatorex's (2024) recommendations for describing the characteristics of control groups and their learning conditions. Since parallel 8th and 9th grades with equal starting conditions were selected, it can be said that the sample is representative in assessing potential causes of differences between the experimental and control groups.

The developed and tested CIDP, based on the synthesis of subject knowledge and active learning methods, made it possible to expand the implementation of meta-competence in educational practice through the emphasis not only on cognitive, but also on social-emotional learning outcomes. This is in line with international approaches to integrating subject content with SEL (Pratiwi et al., 2024; Moreno et al., 2024).

The obtained results of the experiment confirm the findings of scientists (Cardozo et al., 2020; Silke et al., 2024) about the positive impact of active learning methods on improving the social adaptation of students. At the same time, scientists recommend adapting these methods in such a way as to minimize students' anxiety in the classroom, creating a supportive and conducive educational environment.

In addition, the results of the study correlate with the findings of scientists (Nicole et al., 2025; Jack et al., 2020) about the importance of directed and organized learning in the development of students' emotional intelligence and reducing their anxiety levels. The study makes an empirical contribution by confirming that the systemic integration of subject content and active learning methods contributes to the reduction of social anxiety in schoolchildren (by 16.6% in the experimental group) (Cardozo et al., 2020; Salter et al., 2024). According to the results of the study, we adhere to the position of scientists (Pulgar et al., 2022) about the role of cooperation among students, social interactions and support among peers in improving the overall psycho-emotional state of learners.

The results of the experiment confirm the results of studies (de Lijster et al., 2018; Salter et al., 2024), where anxiety is considered as an obstacle to social adaptation in school. Considering the results of this study, measures to improve social interaction along with reducing anxiety levels through group tasks with role assignment were included in the design of the CIDP.

Meanwhile, there are obvious limitations of the study, related, as noted by scientists (Kreijkes & Greatorex, 2024), to the question of the benefits of integrating subject knowledge on the academic performance of learners in each individual subject left unexplored. For the purposes of this study, we can only argue that integrating subject knowledge improves the development of learner's emotional intelligence. However, the appropriateness of this approach on a sustained basis needs further investigation in terms of improving students' social experiences and academic performance.

It should also be noted that the data from the current study were not subjected to in-depth factor analysis, which limits the findings of the study. Subsequent studies may include factor analysis, for example, examining the integration of subject knowledge (Abu-Hijleh et al., 2025) on the scale of empathy and or cooperation of learners or comparing different groups of learners, etc. (Gholamian et al., 2019).

It should also be noted that the long-term impact of CIDP on pupils' adaptation has not yet been studied. As Pulgar et al. (2022) note, a sustained effect in the development of emotional intelligence requires long-term work in a stable educational environment that includes elements of mutual support and reflection.

Conclusion. The results of the study indicate that high levels of school anxiety and insufficient social adaptation are observed in more than one third of respondents. The main factors named are fear of the situation of testing knowledge, not meeting the expectations of others and self-expression, which requires prevention and intervention at the school level. The CIDP aimed at reducing school anxiety using active learning methods and subject knowledge showed positive changes in the level of student's confidence and their ability to cope with emotional difficulties in learning activities. The use of cross-curricular assignments and active forms and methods of teaching contributed not only to the development of cognitive and social skills, but also to a significant reduction in students' anxiety. In the course of the lessons, students learned to reduce their anxiety level through successful completion of tasks, which in turn increased their self-confidence. Systematic use of these methods in the future can significantly increase the psychological adaptation of students, contributing to their more harmonious development in both academic and social spheres.

The teacher's use of active forms and methods of teaching forms the student's ability to integrate subject knowledge to solve problems. This learning environment helps students to respect the opinions of other children, to consider situations from different perspectives, and to learn to interact constructively together. As a result, students become more open, flexible and confident in team projects. In addition, the educational process based on the integration of subject content with active forms and methods of teaching contributes to the development of student's self-reflection skills. This, in turn, has a positive impact on the development of children's confident interaction with the surrounding world and rapid adaptation to changing conditions of social reality.

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Paradigmatic Shift in Pedagogical Design: Transforming Syllabus Development for Innovative Higher Education

Abstract

Introduction. The study addresses the problem of modernizing instructional practices in higher education by focusing on how instructors understand and apply pedagogical design in course and syllabus development. It emphasizes the shift from traditional approaches to innovative methods that incorporate digital resources, interactive strategies, and student-centered learning. *Methodology and Methods.* A mixed methodological framework was applied, combining surveys, semi-structured interviews, and content analysis of syllabi. Data were collected from instructors with diverse disciplinary backgrounds and teaching experience. The analysis focused on the formulation of learning outcomes, assessment strategies, and the integration of digital technologies. *Results.* The findings revealed that although instructors recognize the value of pedagogical design, they often lack systematic training and institutional support. Many syllabi displayed unclear or unmeasurable learning outcomes, limited use of varied assessment methods, and inconsistent incorporation of digital tools. These shortcomings indicate weak constructive alignment between objectives, teaching activities, and evaluation criteria. *Scientific novelty.* The study contributes new insights into the state of pedagogical design practices in higher education, particularly in relation to the integration of digital and interactive methods. It highlights the structural misalignments that hinder effective curriculum development and advances the understanding of pedagogical design as both a theoretical and practical framework. *Practical significance.* The research provides recommendations for improving professional development, strengthening methodological support, and investing in infrastructural resources. These measures can enhance the quality of course design, promote innovative teaching practices, and ensure greater coherence in aligning learning outcomes with instructional strategies.

Keywords: pedagogical design, constructive alignment, backward design, ADDIE, syllabus, higher education.

Introduction. As an essential part of social life, the educational system is constantly changing to satisfy the changing needs of the times and the sociocultural advancement of the community. Changes in educational content, delivery methods, and the roles of educators have resulted from this transformation, which has occurred very quickly in recent years. Within this framework, the concept of pedagogical design is becoming increasingly important in shaping educational environments, highlighting the need to move away from traditional methods towards new, higher-quality paradigms. Pedagogical design is becoming increasingly recognized in contemporary higher education as a substantive and methodological foundation for organizing teaching and learning processes. It involves methodically applying assessment criteria, planning learning activities in phases, and regulating interactions between students and teachers.

Pedagogical design principles are rooted in scientific and theoretical approaches aimed at enhancing teaching quality. Notably, the models of constructive alignment by Biggs (1996) and backward design by Wiggins and McTighe (2005) are considered fundamental to pedagogical planning. According to these scholars, pedagogical design is a methodology focused on improving students' learning

experiences through systematic planning of teaching strategies, learning activities, and assessment methods (Biggs, 1996; Wiggins & McTighe, 2005). Its primary objective is to create an effective learning environment by aligning the learning objectives, content, teaching methods, and assessment approaches (Reigeluth, 1999; Biggs, 1996). This study aimed to analyze university instructors' understanding of pedagogical design, their level of professional training in this area, and their experience in designing course syllabi. The goal was to explore how pedagogical design is understood theoretically and applied to curriculum development. In international scholarly literature, research on pedagogical design is extensive. In Western education systems in particular, it is regarded as a key category linking teaching theory and practice. Studies have indicated that many university instructors, despite being subject experts, often lack formal pedagogical training in course design. Consequently, they tend to rely on the intuition, experience, or templates provided by their institutions when structuring their courses (Darling-Hammond, 2017; Timmermans & Meyer, 2019). This raises concerns regarding the alignment between course content and learning outcomes, potentially affecting the effectiveness of the learning process. In Russia, pedagogical design gained scholarly attention in the early 2000s. Researchers, such as Tokareva (2008), Makarenko (2017), and Demidova (2019), have developed theoretical perspectives on the role of pedagogical design in improving educational quality. However, in the Kazakhstani academic context, pedagogical design remains an under-researched area that requires a systematic study. In recent years, this topic has received increasing attention from researchers such as I. B. Shmigirillova, D. K. Darbayeva, N. A. Rybalko (2022), G. B. S. Bobesh, G. Zh. Smagulova (2023) and M. Serik (2024) examined the content of pedagogical design, as well as the role and influence of information technologies in this field.

In recent years, the Republic of Kazakhstan has implemented several national-level policy documents aimed at enhancing its education system, with a particular focus on integrating modern pedagogical technologies. Specifically, the State Programme for the Development of Education and Science of the Republic of Kazakhstan for 2020–2025, sanctioned by the government, identifies the adoption of best international practices and introduction of innovative teaching methods as pivotal mechanisms for improving education quality. These priorities underscore the importance of advancing pedagogical design in the higher education sector.

However, studies show a discrepancy between the theoretical foundations of pedagogical design and how it is used in college instruction. Many university professors lack specialized professional training in this area. This claim is supported by the preliminary survey results of this study, which show that about 90% of participants said they had never taken any formal pedagogical design courses or professional development programs (descriptive analysis and specific quantitative data are provided).

The primary objective of this study was to determine the perceptions and cognitive insights of university instructors regarding the concept of instructional design, as well as the extent to which these perceptions manifest themselves in the development of programs (syllabi). In addition, the core objective of this research is to evaluate the level of professional preparedness and content of competencies in this field. To achieve this overarching objective, the following scientific and practical tasks have been defined: analyzing the historical and theoretical evolution of the concept of instruction design; comparing globally established theoretical models with national practices; examining the practical state, scope, and existing challenges of instruction design in Kazakhstan universities through an online survey and semi-structured interviews with university instructors; and scientifically analyzing the collected data and proposing practical recommendation-based mechanisms for the systematic and effective implementation of educational design in higher education institutions.

The study also presents *the main research questions*: To what extent do university instructors

fully and accurately understand the principles of educational design? What parts of them have vocational training or specialized courses in this field? Do course programs (syllabi) develop in line with current instruction standards? What are the main disadvantages of the syllabus structure? By addressing these questions, this study aims to investigate the extent to which educational design is theoretically understood within the current landscape of higher education in Kazakhstan, and how deeply it is integrated into educational content.

The relevance of research results from the need to systematically structure the educational process and improve it through scientifically based design methods. Currently, many university instructors tend to rely on traditional approaches to program development, while modern principles such as constructive alignment and design remain insufficiently widespread (Member, Kwan, 2000; Parkes, Harris, 2002). These gaps can undoubtedly have a negative impact on student learning outcomes (Darling-Hammond, 2017). It is therefore anticipated that theoretical and practical recommendations developed on the basis of this research will help improve the design of courses in universities, improve the methodological skills of instructors, and ultimately increase the quality of education to a new level.

Scientific Novelty: This study represents extensive empirical research in Kazakhstan, which includes surveys, interviews, and syllabus analysis, to investigate the application of educational design by university instructors in the development of natural content. The data collected will provide new and significant insights into the current state of education design within the national higher education sector.

Materials and Methods. This study employed a mixed-methods research design integrating both quantitative and qualitative approaches. The methodological framework was grounded in international models of instructional planning, particularly the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation), which provided guidance for structuring the research. The combination of theoretical analysis and empirical investigation ensured

a comprehensive and accurate examination of instructional design practices in higher education.

The sample included 20 university instructors representing the humanities, natural sciences, and technical disciplines from different regions of Kazakhstan. Teaching experience ranged from 3 to 25 years, with an average of 10 years. Participants were selected through convenience sampling and voluntary participation. Before data collection, all participants were informed about the study's objectives, assured of confidentiality, and notified that no personal information would appear in the final research output.

Four complementary methods were employed to collect data:

1. Online Survey. A 20-item questionnaire (Google Forms) examined instructors' use of digital tools, formulation of learning outcomes and evaluation criteria, implementation of interactive teaching methods, prior training in educational design, and open-ended suggestions for improvement.

2. Semi-structured Interviews. Ten instructors from various disciplines participated in in-depth interviews lasting approximately 30 minutes. Interviews explored experiences with instructional design, methodological approaches to syllabus development, and encountered challenges. All interviews were audio-recorded and transcribed verbatim for analysis.

3. Focus Group Discussions. Three focus groups were conducted, each consisting of 5–6 instructors. The discussions addressed strategies for curriculum renewal, institutional support mechanisms, integration of digital technologies, and challenges in instructional planning. These sessions also served to validate and extend survey and interview findings.

4. Syllabus Content Analysis. Twenty syllabi from different departments of the K. Sagadiev International University of Business were analyzed. Criteria included clarity and measurability of learning outcomes, diversity of assessment methods, student-centered teaching strategies, integration of digital resources, incorporation of project-based learning, and overall structural coherence.

The research process began with a review of domestic and international literature on

instructional design to establish the theoretical foundation. This was followed by systematic empirical data collection using the four tools above. All surveys were conducted anonymously, ensuring freedom of expression and authenticity of responses.

Quantitative survey data were processed using descriptive statistics (frequencies, percentages, and means) in SPSS. Qualitative data from interviews and focus groups were subjected to inductive thematic analysis, with recurring ideas grouped into clusters such as *methodological support*, *infrastructural provision*, and *incentive mechanisms*. Representative quotations were included to illustrate findings. Syllabi were analyzed through both frequency counts and qualitative evaluation based on instructional design criteria.

To ensure validity and reliability, triangulation was applied by cross-checking survey, interview, and syllabus data. Additionally, two independent researchers conducted coding of qualitative data, reaching an intercoder agreement of over 90%, which strengthened the consistency of interpretation.

Results. From a theoretical and practical standpoint, it is important to examine the extent to which the commonly discussed pedagogical design principles of modern education can be applied in real classroom environments. With an emphasis on its structural and content-related aspects, this study attempts to provide a thorough account of how university instructors implement pedagogical design. When incorporating pedagogical design principles into the learning process, university instructors frequently lack consistency and systematic approaches according to the data gathered for this study. According to the results of the surveys and interviews, new teaching strategies and resources are regularly used, either formally or informally (Figure 1).

Survey Results by Indicator

Indicator	Share of Respondents (%)
Those who expressed demand for institutional reforms	100%
Regular users of interactive methods	30%
Teachers with experience in interactive teaching	60%
Those who completed formal professional training	10%
Those who acquired pedagogical training	90%
Those with systematic experience in using digital tools	15%
Those integrating digital technologies	70%

Figure 1: Scientific and Practical Indicators Related to Pedagogical Design Practices According

Scientific and Practical Indicators Related to Pedagogical Design Practices According to the survey, when asked, 'Do you use modern educational technologies (digital platforms, online tools) in your lessons?' 70 % of respondents affirmed their use. Only 15% of the respondents said that they use these technologies as a systematic and essential component of their lessons. Others said that they occasionally used them when necessary. According to these data, the full potential of digital tools is still unrealized, which could have a negative pedagogical impact on educational efficacy. Instructors' lack of specialized training in

pedagogical design is another urgent problem. Regarding "Have you received formal training in pedagogical design and modern teaching methods?" Eighteen respondents (90%) said they had never taken a formal course. Only two teachers participated in university-sponsored seminars and workshops.

This finding suggests a lack of institutional support, which has been identified as a major obstacle to the successful design of academic programs, in addition to a lack of professional development opportunities. A number of significant problems were identified by the study, which also examined the application of interactive teaching techniques. Approximately 60% of those surveyed stated that they incorporated case studies, group projects, discussions, and project-based learning into their lessons. Only roughly half of them, though, said they regularly used these techniques each week. According to others, they employ only interactive methods for particular subjects or on an inconsistent basis over the semester. Some teachers who participated in the interviews mentioned time constraints, large class sizes, and a lack of methodological training as reasons why they could not use these techniques.

One respondent noted, «I'd like to engage students through gamification, but it's hard to fit it into the lesson schedule». This demonstrates that, although educators are aware of these techniques, they frequently lack the tools and expertise necessary to fully apply them. Instructors expressed a strong need for institutional support according to open-ended survey questions and interview findings about syllabus development. Every respondent offered recommendations in response to the question, «What institutional changes are needed to improve the course development process?». Approximately 30 recommendations were examined and divided into four primary categories.

The need for clear guidelines, model documents, and frequent workshops devoted to syllabus development was often emphasized by instructors. Most recommendations point to the need for organized training courses that prioritize real-world implementation of pedagogical design concepts. Infrastructure:

The importance of having material resources to support the adoption of new technologies is emphasized. Among the recommendations were the supply of interactive equipment (such as boards and projectors) and the guarantee of fast internet access. *Incentive Mechanisms*: The respondents suggested offering instructors who use creative rewards or salary bonuses in addition to material and moral support. *Time and Workload*: To devote more time and effort to creating high-quality curricula, some educators argued for lighter workloads and fewer administrative duties.

These arguments imply that instructors must allocate time and energy in a balanced manner to engage with pedagogical design. Overall, the study found that although teachers are somewhat familiar with the concepts of pedagogical design, they lack the necessary skills to implement them consistently and methodically. Furthermore, professional development techniques and organized methodological support are required for higher education. We turn to the findings of a content analysis of course syllabi from the standpoint of pedagogical design to further clarify these conclusions. Syllabi Content Analysis (from the Point of View of Pedagogical Design): Twenty curricula were examined using the following criteria:

The objective was to assess the extent to which these course documents aligned with the principles of modern pedagogical design. *Learning Outcomes*: This study examined how curricula were developed. Theoretically, action-oriented quantifiable verbs that are in line with Bloom's taxonomy should be used to construct learning objectives. Eleven curricula used quantifiable and unambiguous verbs, such as "analyze," "apply," and "design," according to the analysis. Nine curricula, however, only used ambiguous verbs like "know" or "understand," leaving out any indication of what the students were expected to learn. As a result, many course objectives were not clearly stated, which may have a detrimental effect on the caliber of the assessments and feedback. *Assessment System:* There was little variation in the assessment techniques used, even though all curricula included elements,

such as midterms and final exams. Thirteen curricula used only conventional evaluation methods, such as ratings, midterms, and final exams. Project work, portfolios, presentations, essays, and self-directed tasks are examples of alternative assessments that were included in only seven. These were used unevenly, although (some curricula only included a presentation, while others only included one project), and the evaluation standards were frequently vague. The limitations of the assessment system limit the ability to assess a wide range of student competencies. *Digital Technology Use*: The incorporation of information and communication technologies (ICT) into the curricula was also analyzed. Specific digital platforms or tools utilized in the course were specifically mentioned in eight syllabi (e.g., "The course is delivered via Moodle", or "Kahoot is used for online testing"). The information in the remaining 12 curricula was unclear; some made reference to the general "use of electronic resources," while many made no mention of digital tools. This implies that most courses do not integrate ICT systematically.

Discussion. The present study set out to diagnose the state of instructional design in Kazakhstan's universities by triangulating survey data, semi-structured interviews, focus group discussions and syllabus analysis. Our findings revealed that many course syllabi lacked clearly formulated learning outcomes, rarely incorporated digital resources or project-based learning, and relied on narrow assessment formats. Survey and interview data showed that instructors used digital tools sporadically and received little training in instructional design. Participants emphasised the need for methodological support, institutional infrastructure and incentive mechanisms, underscoring that current instructional design practices are not aligned with contemporary pedagogical frameworks. These results have important implications for the modernisation of higher education in Kazakhstan and resonate with international research on digital transformation and instructional design.

Our findings are consistent with studies documenting both the potential and the challenges of digital transformation in higher education. For example, Petchamé, Iriondo, Korres, and Paños-Castro (2023) evaluated a hybrid virtual teaching format based on a smart-classroom system and found that broadcasting lectures via videoconference created a resilient format that allowed teaching to continue during emergencies and gave students flexibility in choosing on-campus or remote attendance. However, they emphasised that when face-to-face and online modalities run concurrently, instructors must carefully design activities to minimise issues such as technical problems, distractions and a lack of belonging. Participants in the present study raised similar concerns: despite recognising the potential of digital tools, they reported limited competence in designing hybrid or online courses and noted that existing curricular structures do not support interactive learning. Both studies therefore highlight the need for systematic professional development to help instructors integrate digital technologies effectively.

Recent literature also stresses that digital learning offers advantages–such as expanded access and flexible pacing–but introduces significant pedagogical challenges. A 2025 review in *Frontiers in Education* (Zou, 2025) notes that while digital platforms can enrich learning through multimedia, gamification and real–time assessment, effective integration requires rethinking instructional strategies and providing extensive teacher training. The same review points out that simply digitising existing content is insufficient; educators must adopt new approaches to engage students in virtual settings and ensure inclusivity. These observations mirror our participants' complaints that digital tools are adopted superficially and without pedagogical coherence. The lack of clearly measurable learning outcomes in analysed syllabi further suggests that constructive alignment–the alignment of objectives, activities and assessments–remains underdeveloped. Like our respondents, the review also highlights the digital divide and data–privacy concerns, which are particularly relevant to Kazakhstan given disparities in internet access between urban and rural regions.

Teachers' perceptions of online and blended learning are ambivalent. A large international survey of 636 higher–education instructors conducted during the COVID–19 pandemic (Lucas & Vicente, 2022) found that online teaching provided benefits such as flexibility, accessibility, pedagogical innovation and opportunities for student self–regulation. Yet the same study identified engagement, interaction, technical support, assessment and pedagogical practice as major challenges. Our focus–group participants echoed these sentiments: they valued the flexibility of digital tools for accommodating diverse student needs, but lamented the difficulty of maintaining student engagement and pointed to insufficient institutional support. Interestingly, while instructors in the international survey viewed online teaching as a "double–edged sword" with elements perceived as both beneficial and challenging, our participants tended to emphasise the negative aspects, perhaps reflecting the greater scarcity of infrastructure and training in Kazakhstan. This difference underscores the importance of context when interpreting perceptions of digital learning.

Another strand of research focuses on faculty readiness for online teaching. Zgheib, Al Daia, and Serhan (2023) surveyed 210 university instructors in Lebanon and identified five factors associated with online–teaching readiness: technology access and skills, course design, online pedagogy, attitude and institutional support. Their study found that although instructors possessed basic technology skills, they faced contextual challenges and required stronger institutional support. Readiness varied by gender, teaching experience and discipline, with arts–based instructors feeling less prepared to teach online. Our findings are congruent with these results: Kazakh instructors reported that their institutions offered limited professional development, lacked clear guidelines for course design and provided little recognition for pedagogical innovation. The syllabus analysis showed that course design elements such as measurable outcomes and diversified assessments were often missing. Whereas Zgheib et al. documented differences across disciplines

and demographics, our small sample did not allow for such comparisons. Nonetheless, both studies emphasise that online–teaching readiness depends not only on individual competence but also on structural factors such as institutional culture and resource availability.

The present study adds to the literature in several ways. First, it is one of the few investigations of instructional design practices in Kazakhstan and thus provides a regional perspective often missing from global analyses. By combining survey, interview, focus-group and syllabus data, the research offers a comprehensive picture of instructors' experiences and the structural barriers they face. Second, the integration of syllabus content analysis reveals concrete misalignments between stated learning outcomes, teaching methods and assessment strategies, illuminating a gap that may not be apparent from self–reported data alone. Third, the study highlights the interplay between digital transformation and institutional policies: instructors expressed a strong desire to adopt innovative methods but lacked incentives and support mechanisms to do so. These findings underscore the need for national guidelines on instructional design and digital pedagogy, professional–development programmes tailored to local needs, and investment in infrastructure.

Like all studies, this research has limitations. The sample size of 20 instructors limits gene-ralisability and prevents robust statistical analysis of subgroup differences. In addition, the focus on a single country means that caution is required when extrapolating findings to other contexts. Nevertheless, the parallels between our results and those of studies from other regions suggest that many challenges are universal, while the differences highlight the importance of contextual factors such as institutional culture, resources and national policies. Future studies could employ larger samples and comparative designs to examine how instructional design practices vary across disciplines and institutions in Central Asia. Longitudinal research could also track the impact of reforms and professional–development initiatives on pedagogical outcomes.

Conclusion. According to the study's findings, a sizable percentage of teachers lack formal

pedagogical training, frequently use instinctive methods to create curricula, and are untrained in modern pedagogical models. According to content analysis of curricula, assessment methods are primarily limited to conventional exams, and learning objectives are frequently stated in a formalistic way. In addition, the learning process has not consistently integrated interactive teaching techniques and alternative assessment methods. These results highlight the need for a thorough evaluation of curricula, in terms of both methodology and content. Improvement of facilities in schools. They also emphasize the necessity of providing instructors with institutional support, specifically in the form of pedagogical design, professional development programs, methodological resource access, encouragement of creative practices, digital tool usage guidelines, and improved educational infrastructure. The findings highlight the importance of creating a learning environment that focuses on the needs of students. Developing action–oriented learning outcomes, providing opportunities for student choice, and creating course content using flexible approaches that consider learner autonomy are important steps in this direction. This study offers a thorough analysis of pedagogical design in the context of higher education in Kazakhstan, highlighting its advantages and disadvantages. Its scientific value lies in providing a set of specific suggestions based on actual instructional strategy data. The recommendations' direct application in raising the standard of university education accounts for its practical significance. These results indicate that the improvement of faculty members' methodological culture, systematic integration of contemporary teaching techniques and technologies, and growth of instructors' professional competencies in pedagogical design are essential prerequisites for raising the standard of higher education.

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Opportunities and Challenges of Developing Self-Learning Through Artificial Intelligence and Virtual Reality

Abstract

Introduction. Background of this research has brought artificial intelligence and virtual reality to the forefront of education. *Methodology and Methods* focus on theoretical integration of these technologies into self-learning, which has a profound impact on educational practices, providing personalised, adaptive, and contextualised learning experiences. However, there is a gap in understanding how these technologies relate to the development of self-learning skills. Our study examines the transformative potential of artificial intelligence and virtual reality in self-learning by investigating its impact on learner engagement, retention, and independence. A research purpose is to evaluate the effectiveness of these technologies. *Results* demonstrate significant intrinsic motivation as self-managed and self-organised skills. The consistency illustrates the potential of artificial intelligence and virtual reality to improve student self-control and motivation. However, there are still some challenges that hinder the use of these technologies in education. *Scientific novelty* addresses issues including cyber sickness, technical demands, ethical concerns related to data privacy, and algorithmic bias. *Practical significance* is that by overcoming these challenges, artificial intelligence and virtual reality, through interdisciplinary collaboration, can become a key factor in the democratisation of education, ensuring access to quality education for diverse populations.

Keywords: artificial intelligence, virtual reality, education, students, motivation.

Introduction. Nowadays, with the generations of new learners, the landscape of education and professional development continues to evolve into something transformative. The traditional educational approaches face challenges in meeting the diverse needs of learners. Self-directed learning (SDL) refers to the method in which students study independently to complete their learning objectives, establish goals, implement, and evaluate their learning outcomes (Knowles, 1975). With SDL, students can take control of their learning by making decisions for themselves about what they need to learn, their goals, the materials they require, how they will learn, and what they will learn.

Gurr and Drysdale (2020) state that Methodist Ladies' College (MLC) was a leading school in using digital technologies in the learning process. David Loader, a principal of MLC, is a pioneering Australian educator best known for his groundbreaking role in creating the world's first laptop classroom in the 1990s. (https://collections.museumsvictoria.com.au/articles/17840). Loader (2019) highlights that teachers not only address the academic tasks for students, but they should also understand the problems students face during the learning and teaching process. Artificial Intelligence (AI) and virtual reality (VR) might bring significant changes to education. Young people should be prepared for the demands of society, and teachers should equip them with the skills required by modern society. Gurr and Drysdale (2020, p. 25) described David Loader as a strategic leader in

the education domain; D. Loader said to adopt 1:1 computing, a process which includes four stumbling blocks, such as computers fulfilling the school educational philosophy, development to use laptops in the classroom, philosophy of personal computing, change from teaching settings to learning organization. Although David Loader did not explicitly focus on AI and VR, his insights are highly relevant to leading school communities through technology-driven change. Furthermore, Gurr & Drysdale (2020) do not directly examine AI and VR in education. Still, they demonstrate that leadership in such challenging times depends on fundamental purpose, adaptability, collaboration, and continuous learning – abilities that include awareness and preparation for the successful integration of AI and VR.

While VR-based self-directed learning holds immense potential for revolutionizing self-directed learning (SDL), offering learners unprecedented control, personalization, and immersive experiences (Buzio et al., 2017), AI-based SDL is increasingly recognized as a foundation for lifelong learning, especially in the context of rapid technological advances and rapidly changing modern societies. SDL is deeply rooted in various educational theories, emphasizing learner autonomy. Ten Cate et al. (2011) explored how intrinsic motivation influences SDL. This theory posits that when learners feel autonomous and competent, they are more likely to engage in self-directed learning activities. Similarly, Hu (2019) discusses the implications of SDL for competency-based medical education, emphasizing the need for students to take responsibility for their learning journeys. The integration of cognitive load theory further explains the challenges learners face in balancing intrinsic and extrinsic motivational factors when managing their learning experiences. This study synthesizes key research findings on SDL, discusses its underlying theories, and examines how AI and VR are changing traditional models of self-directed learning.

Materials and Methods. This study used a literature review approach based on theories of self-organization, self-learning, and the integration of information technology in education. Research sources were systematically reviewed from major databases (Scopus, Web of Science, ERIC, Google Scholar), focusing on work on digital technologies conducted over the past two decades. The analysis used thematic synthesis, grouping studies into a theoretical framework, and identifying recurring themes to explain the impact of digital technologies on self-learning (Figure 1).

Identification:
Records identified through database search from Scopus, Web of Science, ERIC, Google Scholar (n = 120)

↓

Screening:
Records after duplicates removed (n = 95)

↓

Eligibility:
Full-text articles assessed for relevance (n = 60)

↓

Included:
Research included in qualitative synthesis (n = 55)
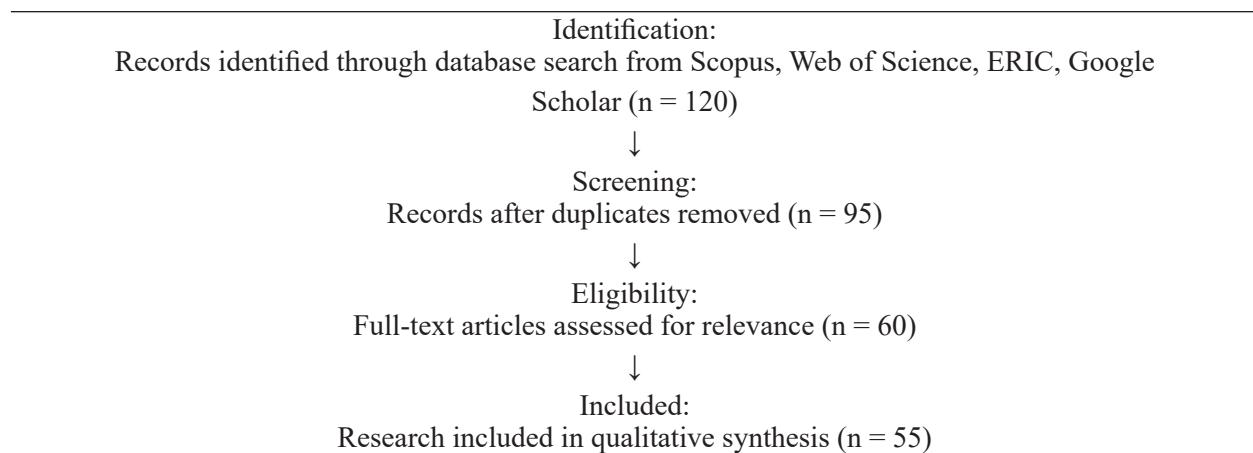
Figure 1: PRISMA Flow

Authors of this study are based on the following theoretical foundation:
- theory of self-organisation and self-development (D. Gurr, L. Drysdale, ten Cate, R.A. Kusurkar, G.C. Williams, P.L. Nesbit, D.V. Day, J.W. Fleenor, L.E. R.E. Atwater, Sturm, R.A. McKee, A. E. Gottfried, A.W. Gottfried, R.J. Reichard, D.W. Guerin, P.H, Oliver, R.E. Riggio, I.E. Ditkovskaya, A.I. Kalinina, T.E. Kirikovich, etc.);

- modern theory of self-education (R.G. Brockett, R. Hiemstra, D.R. Garrison, M.S. Knowles, G. Grow, A. Silamut, S. Petsangsri, P.W. Richardson, H.M.G. Watt, N. Selwyn, V. Curran, D.L. Gustafson, K. Simmons, H. Lannon, Ch. Wang, M. Garmsiri etc.);

- conceptual provisions of the theory of development of self-education skills (D. Urhahne, L. Wijnia, I.F. Medvedev, D.M. Puzyrevsky, N.A. Nozdrina, M. Alizadeh, N. Cowie, A. Bandura, P.C. Candy, P. Strousopoulos, C. Troussas, G. Makransky, G.B. Petersen, B.J. Zimmerman, etc.);

- Theory of implementation of information technologies in the educational process (D. Loader, W. Hu, Z.-J. Liu, N. Tretyakova, V. Fedorov, M. Kharakhordina, S. Vert, D. Andone, A. Marougkas, C. Troussas, A. Krouska, C. Sgouropoulou, C. Hua, J. Wang, etc.);

- Theory and methodology of informatisation of educational activities and designing and implementing electronic teaching aids (H. Luan, P. Géczy, H. Lai, J. Gobert, Stephen J.H. Yang, H. Ogata, J. Baltes, R. Guerra, Ping Li, Chin-Chung Tsai, I.E. Ditkovskaya, St. Duggan, J. Hawkins, A.A. Trifonov, etc.).

To evaluate the effectiveness of these technologies, the method of theoretical analysis of existing studies of the problem was used, allowing for a comprehensive understanding of the multifaceted impact of digital technologies on SDL. This approach involved critically reviewing systematic literature and empirical research to identify key dimensions.

Results. *The Impact of AI on Self-Directed Learning Processes:* In 2021, J. Hawkins wrote: "The twenty-first century will be transformed by intelligent machines in the same way that the twentieth was transformed by computers" (Hawkins, 2021). This fully applies to the problems of transforming education and self-education. Luan et al. (2020) examine how AI and big data are transforming educational research and practice, enabling learners to develop personalised learning experiences that empower them to take control of their learning. Artificial intelligence technologies enable personalized learning that responds to the unique needs and preferences of learners, by increasing their engagement and autonomy. Nesbit (2012) examined how AI facilitates immediate feedback and personalized instruction, which are essential for developing critical thinking and self-regulation skills. AI can be used in educational practices not only to support individual learning journeys, but also to foster a culture of lifelong learning. Furthermore, Urhahne and Wijnia (2023) discussed the potential of AI tools to create inclusive and equitable learning environments, suggesting that educators can design sustainable learning systems that support the diverse needs of learners, ultimately increasing opportunities for self-directed learning. This integration highlights the importance of technology in shaping modern learning experiences, as learners are able to take control of their own learning.

Education is one of the key areas where AI shows significant potential for transformation. The advent of AI has brought significant benefits to human life. Artificial intelligence systems personalize the learning and teaching process and automate administrative (management) tasks. In addition, AI can also provide new opportunities for assessment/reflection of knowledge. AI can make teachers' work easier by providing personalized learning experiences, automating administrative tasks, providing real-time feedback, facilitating professional development, improving teaching strategies, and influencing education. AI can also help create adaptive curricula that ensure equal learning opportunities for children with special educational needs. AI helps create personalized curricula that consider the student's strengths, weaknesses, interests, and learning goals. This allows everyone to move at their own pace, focusing on the aspects that require the most attention. The use of machine learning and deep learning techniques in education is not a new phenomenon. Adaptive exams (tests that adjust to the student's capabilities, such as correct answers triggering more difficult test questions, and incorrect answers triggering easier test options) and models that automate the checking and grading of student work have been around for many years.

Using AI in the learning process helps students develop the following skills: workflow organization, reflection, critical thinking, and fact-checking. Instead of creating content from scratch, students learn to delegate tasks to performers, which are technologies. Essential skills of thinking and fact-checking are necessary for evaluating the results of neural networks and analyzing the relevance and timeliness of these results.

Overuse of AI for problem solving can hinder students' critical thinking skills and independent learning. For example, AI can provide solutions to complex problems in seconds as a homework helper, but it may not fully understand social and humanitarian issues such as moral dilemmas and situational questions. One of the main challenges in artificial intelligence is the risk of bias. Machine learning algorithms are often trained on data that contains hidden biases. Therefore, assessment and acceptance algorithms can be not only vague, but also biased. For example, AI that predicts student performance may, on the one hand, favor students from well-funded schools and, on the other hand, underestimate students from under-funded schools.

Key components of AI-based educational systems include adaptive learning technologies that personalize material according to the specific needs of individual students, as well as data analytics tools that help teachers identify learning gaps and understand patterns in student performance. Using generative AI, teachers can quickly create content for educational materials, presentations, and similar assignments. The solutions also allow you to analyze learning metrics, adapt curricula to the needs of specific students, and automate routine operations. There are several key use cases for artificial intelligence in education: personalization of learning, including assistance to students with special needs, resource planning and forecasting of learning outcomes, curriculum development and other forms of automation of routine teacher tasks, administration of the learning process, and ongoing assistance during learning (Ditkovskaya, 2024; Duggan, 2020; Maltsev, 2024; Talgatov, Kassymova, and Nurtanto, 2024).

The Impact of VR on Self-Directed Learning Processes: Nowadays, VR has become a promising tool in educational institutions, attracting the interest of educators due to its potential to improve the quality of learning (Urazaliyeva, Bekalaeva, Kassymova, 2024). VR offers unprecedented opportunities to cultivate self-directed learning by immersing learners in rich, interactive environments that they can navigate autonomously. Unlike conventional learning tools, VR places individuals at the center of experiential simulations where they make decisions, explore concepts, and solve problems in contexts that mirror or extend real-world scenarios. According to Alizadeh and Cowie (202), this autonomy can foster core drivers of self-directed learning such as intrinsic motivation, curiosity, and sustained engagement. Another essential advantage of VR is the immersive ability to transport users to inaccessible locations, such as historical monuments, remote areas, outer space, or even the human body. This offers unique perspectives that can enhance engagement, which may result in better understanding (Marougkas et al., 2023). Moreover, VR's immersive nature fosters a stronger sense of presence, thus motivating learners to participate and explore topics more deeply and actively (Hua & Wang, 2023).

Moreover, VR learning platforms can also provide secure, consistent, and individualized learning environments, which in turn allow learners to express their initiative and develop their understanding of the subject through repeated practice (Gan et al., 2023). Another key benefit of VR is that it offers learners opportunities to practice and improve skills in a safe, controlled setting without the fear of real-world consequences (Leung et al., 2018). Additionally, those platforms customized to individual learning styles and paces may provide targeted support and feedback based on specific needs (Zizza et al., 2018). Some of the latest advancements of VR technologies are AI-enhanced VR platforms, which further strengthen this potential by adapting experiences to individual learner profiles. Intelligent systems can monitor performance and dynamically adjust task complexity or provide tailored

feedback, enabling learners to progress at their own pace and according to their evolving needs. For example, language learners might practice conversational skills with AI-driven avatars that respond contextually. At the same time, science students can conduct virtual experiments, test hypotheses, and observe outcomes without the constraints of physical laboratories (Chen et al., 2022). Thus, VR integration into education, including SDL, allows students to take an active role in their learning through experiential, case-based activities and social interaction (Vert & Andone, 2019).

However, integrating VR for SDL also introduces several significant challenges that require careful attention to maximize its educational benefits. VR-supported SDL requires proper scaffolding and thoughtful instructional design because learners might feel overwhelmed by the huge number of choices VR environments or distracted by immersive environments' sensory features, which can hinder focus and cognitive processing (Phoon, Idris, & Rahina, 2021; Radianti et al., 2020). Additionally, Alizadeh and Cowie (2022) mentioned that VR-related discomfort, such as cybersickness, may further limit sustained participation for some users. They conducted a small scoping longitudinal study with a group of five volunteer participants. During the first stage of their research, participants reported experiencing varying levels of cybersickness.

Moreover, educators need comprehensive training and ongoing support to effectively help students navigate these complex virtual spaces and integrate VR meaningfully into their self-directed learning (Merchant et al., 2014; Phoon, Idris, & Rahina, 2021). However, despite these hurdles, when applied with clear pedagogical goals and aligned with learning theories, VR can be an effective driver for fostering SDL. Since it can provide personalized, immersive, and interactive experiences that promote deeper understanding, skill development, and motivation, helping to prepare learners to succeed in complex and rapidly changing environments (Strousopoulos & Troussas, 2024; Dede, 2020; Makransky & Petersen, 2021). Thus, as VR technology progresses and becomes more accessible, its potential to transform self-directed learning and educational outcomes is likely to grow significantly.

Self-Education Models: What distinguishes self-education from formal education is the process of independent learning and mastering knowledge and skills. There are many models of self-education, which can be divided into individual and group, as well as formal and informal (Knowles, Holton, & Swanson, 2015). Research concepts and models of self-education consider this process as an important tool for developing personality and professionalism, offering various approaches and strategies for effective self-education (Candy, 1991; Tough, 1979). Self-education is a multifaceted process that can be adapted to individual needs and interests (Brookfield, 1986). Various research concepts and models of self-education offer tools and approaches that will help make this process more effective and efficient (Zimmerman, 2002). Main concepts and models:

1) The concept of self-education as a continuous development process: Assumes that self-education is an ongoing process that should be included in everyday life, allowing a person to constantly expand their knowledge and skills (Illeris, 2004).

2) Model based on goals and motivation: Emphasizes the importance of defining specific goals for self-education and motivation that will support the process (Schunk & DiBenedetto, 2020).

3) Model based on resources and tools: Considers access to a variety of resources (books, articles, online courses, expert consultations) and self-education tools (planning, self-monitoring, feedback) (Candy, 1991; Garrison, 1997).

4) Model based on self-regulation and self-motivation: Proposes to develop the ability to plan, control, and evaluate your progress, as well as maintain motivation and interest in the process of self-education (Zimmerman, 2002; Pintrich, 2004).

The Garrison model identified three dimensions that indicate the effectiveness of independent learning. These are self-management, self-control, and motivation.

D.R. Garrison also paid special attention to the context of cognitive responsibility and strong control of students' internal motivation, which are necessary for effective learning through independent learning (Garrison, 1997). In turn, the G. Grow (1991) model shows the stages of independent learning, where students move from dependence on the teacher to complete independence in the learning process. The peculiarity of the Grow model is that it plays a decisive role in guiding this process and changes depending on the stage. He emphasises in his works that students cannot begin the process of independent learning without the guidance of the teacher (Grow, 1991). In the structure of scientists Silamut and Petsangsri, independent learning is combined with knowledge management. According to the authors, this strategy contributes to the development of digital literacy skills. The authors believe that learning management processes, such as knowledge discovery and application, can be integrated with structured steps of self-directed learning (Silamut & Petsangsri, 2020).

Day et al. (2014) reviewed 25 years of broad themes in leadership and leadership development in education. The authors emphasize that personal motivation is essential for effective leadership development. They argue that for development programs to be successful, participants must be intrinsically motivated and committed to learning and personal growth. The article suggests that leadership development programs should be designed to enhance and align participants' intrinsic motivations, rather than relying solely on extrinsic motivation. Furthermore, Day et al. (2014) identify motivation as a key psychological factor that influences an individual's ability to self-directed learning, starting with their leadership development initiatives. In addition, Gottfried et al. (2011) examined academic intrinsic motivation in childhood and adolescence as a predictor of three aspects of leadership motivation. They included three aspects - two intrinsic motives and one extrinsic motivation (Table 1). The first two of the leadership motives are intrinsic, while the third is influenced by external forces. The study found that academic intrinsic motivation was highly correlated with affective congruence and noncognitive components of leadership motivation, supporting the authors' argument that intrinsic motivation is a condition that reflects continuity across the lifespan for self-development.

Table 1. *Three aspects of motivation in education*

Aspects of motivation	Descriptions	Examples in Self-Directed Learning
Affective identity motivation	leads to concerns about the enjoyment and identity associated with being a learner.	A student enjoys discovering new knowledge and sees themselves as a lifelong learner who loves learning.
Non-calculative motivation	concerns learning for its own sake, not for external rewards or recognition.	A person studies philosophy and science topics on their own, not for grades or promotions, but out of pure curiosity.
Social-normative motivation	concerns learning out of a sense of duty or responsibility.	A teacher pursues professional development through self-directed courses to better support their students, seeing it as their ethical duty.

The PPC model (Figure 2) emphasises characteristics of the individuals and their interaction between individual attributes (Person), teaching and learning activities (Process), and organisational factors (Context). Based on these key themes of this model, Curran et al. (2019) provided an updated holistic view of SDL in a digital age as a continuous professional education. Learning strategies, goal setting, and reflective practices are used in the learning and teaching transactions, which are the procedural core of SDL. The PPC model aligns well with AI and VR-driven SDL as they offer distinctive advantages in each of these

areas, becoming a powerful tool for supporting self-directed learning:

1. Personalising learning processes based on learner profiles;

2. Facilitating adaptive processes through real-time feedback and intelligent tutoring systems; and integrating contextual data to create appropriate learning environments (Gureckis & Markant, 2012);

3. Immersive experiences increase learner motivation and engagement, helping individuals take initiative and sustain interest in their learning projects (Dede, 2009; Schunk & DiBenedetto, 2020);

4. Sense of agency and control in VR environments boosts learners' confidence in their ability to direct their learning (Bandura, 1997; Zimmerman, 2002);

5. VR enables learners to tailor experiences to their needs, supporting diverse learning styles and preferences (Johnson et al., 2016);

6. VR environments can be structured around specific learning goals, enabling learners to set, pursue, and achieve objectives autonomously (Candy, 1991);

7. VR can also facilitate group learning and social interaction, enriching the sociocultural context of self-directed learning (Garrison, 1997).

Russian researchers note that the traditional didactic cycle of "mastering new knowledge – consolidation – monitoring and evaluation" in the era of digital technologies as AI and VR will inevitably transform, bringing it closer to a model of problem-based learning based on independent discovery, understanding and overcoming the "gap" between existing knowledge and teachings – and their inadequacy for solving new types of problems. The new didactic logic, having not so much a cyclical, but rather an open and continuous character, takes the following form (Kondakov, Sergeev, Abramov, 2024; Selwyn, 2024; Shutikova & Beshenkov, 2020; Wu, Burdina, & Gura, 2023):

- focusing (defining the topic, idea, project concept, based on the achieved educational level and based on current educational deficits);

- problematization (highlighting the problem within the framework of a previously defined topic, assessing its significance);

- goal setting (transforming the problem into a task or a set of tasks);

- information search, during which a value attitude towards socially and personally significant information is built;

- developing a solution to the problem (or a set of alternative solutions), considering the collected information;

- checking the functionality of solutions (experiment, expert assessment, etc.);

- reflexive after-action (assessment, self-assessment of the progress and results of work with the participation of AI);

- return to a certain stage of this cycle, to the previous cycle or transition to a new cycle (depending on the results of the reflexive after-action).
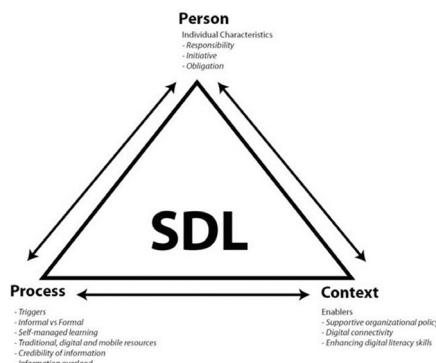
Figure 2: PPC Model of Brockett & Hiemstra (2012), updated by Curran et al. (2019)

In the axiologically oriented, non-linear personal didactic model of self-education (Kirikovich, 2014), there is no teaching process; the teacher and the student in one

person are the student himself, provided that the teacher provides competent pedagogical support for this process at the initial stages of self-education. The teaching function, which mainly involves managing the student's educational activities, must be consciously assumed by the student himself. To achieve this, he must master several essential skills for independent learning. The first of them is the ability to build personal information models of knowledge representation as its subjective image in the form of concepts, skills, identified connections, and patterns. The information model of knowledge representation reflects the connections and dependencies between concepts, the subjective image of the information model of knowledge representation may be different for each student, but the concepts and connections between concepts identified during self-study are objective. As a result, information models of knowledge representation have a personal character, reflecting the characteristics of an individual's development. The second important skill necessary for independent learning is the ability to apply the self-study method based on the "self-study algorithm", which corresponds to the project-technological type of activity organization culture. The basic concept is that the project is transformed into a "self-learning algorithm" for a schoolchild, which includes the following stages: design, implementation, and reflection. The third important skill is an individual's ability to overcome difficulties during self-learning, which we have defined as the capacity to manage the development of one's personality. As a result, the following stages of self-organization of a schoolchild's personality in self-learning as self-management of development are distinguished:

1) actualization of the student's cognitive activity in the conditions of openness of the educational process;

2) overcoming by the student of an internal contradiction at the points of choice, as a result of which qualitative changes occur either in values, or in experience, or mental capabilities, or the personal qualities of an individual, personality, and subject of activity;

3) manifestation of the student's cognitive activity for the implementation of self-management of the vector of his development;

4) transition of the personality to a new quality (Kirikovich, 2014).

Kalinina (2014) writes that the ideal model of self-education is two-dimensional. Only by adhering to the principle of "two-dimensionality" of self-education, i.e., focusing on the implementation of both processes of self-education and self-training, can one achieve a long-term result and form an educated person capable of changing themselves and the world around them for the better through constant self-improvement. Whatever the direct goals, in order to form a personality, it is necessary to simultaneously achieve indirect goals. In other words, any task or assignment must be thought out and constructed by the teacher in such a way that, by fulfilling the direct goal, the student indirectly fulfills the teacher's direct goal. Moreover, whatever the dominant process (self-training or self-education), the presence of both processes is necessary for the implementation of the ideal model of self-education. Thus, the model we present is ideal not in the sense of "the best", but ideal from the point of view of the embodiment of the principle of "two-dimensionality" in the theory of self-education (Kalinina, 2014).

Thus, the formation of self-educational activity in students is a step-by-step process, providing for gradual progress from episodic self-educational attempts to a stable system of self-educational activity. The basis of this process is the modelling of educational situations that develop the ability to set a goal, plan one's education, navigate information, and manage professional self-development. Self-education contains enormous pedagogical opportunities and is an important factor in the preparation of highly qualified specialists who are not only armed with a system of knowledge, skills, and abilities, but are also prepared for life, are able to think and act actively and creatively, and develop and improve themselves. Self-education is a set of processes for the formation of universal skills of self-education and self-training. Self-education and self-training are

essential components of self-education, which is the path to self-realization, the ultimate stage of an individual's realization of their potential (Medvedev, 2013; Puzyrevsky & Nozdrina, 2022).

Discussion. Transformation of the information foundations of pedagogical activity, which make up the learning process, inevitably causes other profound changes. By leveraging AI and VR technologies, teachers can focus on the core tasks of education and student personal development (Knowles, 1975; Lyakh, Sarafanova, Aleksandrova, 2020; Liu et al., 2020; Trifonov, 2023). A teacher becomes necessary for a student as an image of a mature personality, "successful adulthood" and "successful professional", demonstrating effective strategies of learning and self-education. A teacher of the AI era is a motivator and facilitator, an empath (understanding and accepting every child, teenager, especially the "difficult"), and a mediator (a qualified intermediary in interpersonal and intergroup conflicts). Subject training of such a teacher fades into the background; the focus is on the synthesis of psychological and pedagogical competencies, the main purpose of which is to cultivate the "human in a person". In a pessimistic scenario, the development of digital technologies renders teachers into operators of "smart" digital platforms, pushing them to the periphery of the educational process. There is a risk of professional deskilling among teachers. Traditionally, any methodological deficiency of a teacher required advanced training, the next step along the path of continuous professional and personal growth. However, with the presence of AI, a situation arises where many of the teacher's methodological deficiencies can be addressed by leveraging AI and VR and utilising the appropriate tools.

Despite the promising potential of digital technologies, such as AI and VR, to enhance SDL, challenges remain. Richardson and Watt (2010) discuss the conflicting discourses surrounding the practice of SDL in professional settings, highlighting the need for organisations to support environments that support self-directed learning. As employees are expected to take greater responsibility for their professional development, understanding these dynamics will be crucial for promoting SDL in the workplace. Luan et al. (2020) highlight the challenges of implementing digital technologies in education, arguing that these challenges can be addressed along three dimensions: research, policymaking, and industry. They call for future research, policymaking, and collaboration to overcome these challenges and ensure that AI and VR are used to improve education equitably and responsibly. In education, artificial intelligence has the potential to transform learning by personalising it, improving outcomes, providing feedback, and supporting informed decision-making. However, implementing them also poses significant challenges.

Another challenge is that guaranteeing fair access to VR tools remains essential. High hardware, software costs, and technical demands can exacerbate existing educational disparities and limit access for under-resourced students (Makransky & Petersen, 2021; Phoon, Idris, & Rahina, 2021). Furthermore, VR integration in education faces several key challenges, such as ensuring user comfort to prevent motion sickness, addressing technical limitations such as poor infrastructure, overcoming resistance from poorly trained teachers, and meeting the need for high-quality, curriculum-aligned content. Table 2 provides concrete examples and possible solutions related to the use of AI in education.

Table 2. *Major challenges, examples and possible solutions for integrating AI into education*

Major Challenges	Examples	Possible Solutions
Educational institutions collect confidential data from applicants before university admission.	Student performance, health issues, financial status and demographics, etc.	It is recommended that teachers, students, and parents be included in the development of the admissions policy.

AI models trained on biased datasets may exacerbate inequality among students.	Underestimating students' capabilities in an inclusive environment can lead to demotivation.	There is a need to design inclusive systems that accommodate diverse learning styles and learning environments.
Not all students or schools have equal access to the infrastructure needed for AI-powered tools.	Some areas, such as remote villages, may not have high-speed internet or smart devices and may lack specialists.	Local government and educational institutions should invest in accessibility and digital platforms, especially in under-resourced areas.
Educators and learners may lack the understanding and skills to effectively use AI tools or data.	Some teachers do not know how to use learning analytics data on their intranet website.	Teachers should be provided with ongoing professional development in AI literacy, data interpretation, and digital pedagogy.
User Experience and Comfort	Motion sickness and discomfort during prolonged use	Design ergonomic devices, limit session duration, and provide breaks
Technical Issues and Infrastructure	Insufficient bandwidth and outdated hardware cause lag and crashes	Upgrade infrastructure, use cloud VR, and provide technical support
Teacher Training and Acceptance	Teachers unfamiliar with VR technology resist adoption	Provide professional development and hands-on training
Content Development and Quality	Lack of high-quality, curriculum-aligned VR content	Collaborate with educators to develop relevant content

To effectively overcome these barriers (Table 2), institutions must prioritise ergonomic design and session management, invest in infrastructure and support, provide comprehensive teacher training, and foster collaboration between content developers and teachers. Addressing these challenges holistically is critical to the successful and sustainable implementation of VR in educational settings (Urazaliyeva, Bekalaeva, Kassymova, 2024). While digital technologies bring transformative potential to education, they must be approached with caution, fairness, and foresight. The focus should be on responsible innovation, balancing technological progress with ethical, pedagogical, and social considerations. Successful adoption depends not only on tools but also on leadership, policy, infrastructure, and a commitment to inclusive digital transformation.

Day et al. (2014) and Gottfried et al. (2011) highlight the important role of intrinsic motivation in leadership and self-directed learning, demonstrating that sustained personal growth depends on intrinsic drivers such as enjoyment, curiosity, and a sense of responsibility. These findings are particularly relevant when considering the integration of AI and VR in education. While they have the transformative potential to offer immersive and engaging environments, personalised learning paths, rapid feedback, and adaptive content, their effectiveness depends not only on their technological sophistication but also on how they nurture students' intrinsic motivation. If AI-driven systems and VR platforms focus solely on efficiency and extrinsic incentives (e.g., test scores or grades), they risk neglecting the affective and normative dimensions that underpin lifelong learning. Therefore, one of the key challenges is to design systems that support, rather than replace, self-directed learning and motivational autonomy.

Conclusions. Overall, educators and students lack the understanding and skills to effectively utilise artificial intelligence and virtual reality tools. SDL is a key component of lifelong learning, closely linked to the evolving landscape of education shaped by digital technologies and their integration offers significant opportunities to enhance SDL by providing personalised learning experiences that empower learners. However, some challenges require ongoing research to address the complexities of SDL in diverse contexts. By exploring these issues

and contributing to a deeper understanding of SDL, educators and researchers can empower learners to engage in equitable learning journeys in a technology-driven world. VR can benefit self-directed learners by stimulating intrinsic motivation and engagement through immersive experiences, thereby providing a feeling of presence and deepening learners' understanding of the subject matter. VR platforms offer secure, individualised, and customised learning environments, some enhanced by AI, that support repeated practice, may provide personalized feedback, and enhance skill development without real-world risks. However, for effective integration and equitable access, challenges such as cognitive overload, cybersickness, high costs, and the need for educator training must be addressed. Nonetheless, if VR-supported SDL is aligned with sound pedagogical principles, it may hold significant potential to transform SDL and improve educational outcomes.

The study demonstrated the transformative nature of self-directed learning with the help of AI and VR. However, the article clarifies that the path to fully realising these benefits has its challenges. Differences in access to digital education and digital technologies are significant barriers. In addition, there are ethical issues related to the confidentiality of data necessary to ensure a safe learning environment. Closing these gaps will require the joint efforts of teachers, policymakers, and developers. Assuming these issues are addressed and the gaps are filled, AI and VR-driven SDL will not only materialise but also become a key factor in lifelong education. To fully understand this development, long-term research is necessary to examine how artificial intelligence impacts learning outcomes and student motivation. As AI technology advances, its incorporation into self-directed learning holds great promise for delivering personalised, high-quality education.

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Monitoring the Effectiveness of the Model for the Formation of Network Communication Culture and Digital Etiquette Teachers and Students in the Online Community of the University

Abstract

Introduction. The article presents the results of a study aimed at monitoring the effectiveness of a model for developing networked communicative culture and digital etiquette among university faculty and students in a digital environment. The theoretical foundation of the work is based on the integration of socio-psychological, activity-based, and learner-centered approaches, as well as the cultural-historical paradigm of digital interaction. *Methodology and Methods.* The monitoring system included criteria for assessing the communicative, cognitive, and value-motivational components of networked communicative culture (NCC) and digital etiquette, as well as indicators of their practical implementation in educational and professional online communication. The research methodology combined psychological training scenarios, diagnostic tools, and case analysis, which made it possible to identify the levels of formation of NCC and digital etiquette. *Results.* The findings confirm the effectiveness of the proposed model in fostering responsible digital behavior, enhancing online collaboration skills, and strengthening academic communicative culture. The practice-oriented nature of the results allows the developed model to be applied in designing educational strategies and shaping the digital policy of universities. *Scientific novelty.* The introduction of a monitoring system makes it possible to diagnose the levels of development of NCC and digital etiquette among different participant groups (faculty and students), taking into account their professional and personal characteristics. *Practical significance.* The practical significance of the study lies in the possibility of applying its results in the design of educational strategies and university digital policies aimed at improving the quality of virtual academic interaction.

Keywords: networked communicative culture, digital etiquette, monitoring, innovative model, online community, customization, higher education.

Introduction. The modern system of higher education is developing under the conditions of digital transformation, where online communication between faculty and students plays a key role. Virtual learning environments, immersive technologies, electronic communities, and social networks are becoming not only tools for acquiring knowledge but also spaces for professional and interpersonal communication. At the same time, the quality and productivity of digital interaction largely depend on the level of development of networked communicative culture (NCC) and digital etiquette (DE) among participants in the educational process.

The lack of well-developed NCC and DE skills leads to communication barriers, increased conflict, a decline in academic ethics, and distortion of the educational process. An important task, therefore, is not only the formation of NCC and DE but also the creation of an effective monitoring system that makes it possible to track the dynamics of their development, diagnose problem areas, and adjust educational strategies. Monitoring the effectiveness of such models becomes particularly significant as it ensures: evaluation of the real outcomes of educational innovations; identification of the level of readiness of faculty

and students for networked communicative behavior; improvement of academic communication quality and digital etiquette; and the formation of a sustainable networked communicative culture of interaction within the university's online community.

The relevance of the study is determined by the need to monitor the innovative model developed and tested by U.M. Abdigapbarova and A.E. Berikhanova, entitled «Formation of Networked Communicative Culture and Digital Etiquette among Faculty and Students within the University's Online Community». This model enables a systematic assessment and improvement of the process of developing networked communicative culture (NCC) and digital etiquette (DE) among participants in the educational process of a modern university.

A significant body of pedagogical research emphasizes that the formation of NCC and DE should be accompanied by the creation of an effective monitoring system that ensures the tracking of competence development dynamics, identification of problem areas, and adjustment of educational strategies. For example, Srebryakova (2012) proposed a conceptual-hermeneutic approach to monitoring students' communicative competence, highlighting the need to combine psychological and practice-oriented foundations. Similarly, N.V. Shumina (2021), in her study of soft skills development in the digital environment, justified the feasibility of implementing online monitoring based on interactive technologies (case studies, WebQuest, role-playing games) and confirmed their effectiveness through statistical analysis.

Unlike existing approaches (Srebryakova, 2012; Shumina, 2021), the proposed model takes into account the specifics of the Kazakhstani digital educational environment and relies on the research of domestic scholars (Abdigapbarova et al., 2024; Antonceva et al., 2024). This enables the integration of international experience with the national context, ensuring that the monitoring process is adapted to the peculiarities of communication between faculty and students within university online communities.

Studies by Imangalieva and Samalbek (2021) indicate that communicative competences in

the educational environment directly depend on the use of digital technologies and should be accompanied by systematic evaluation of their effectiveness. Recent scholarly publications (Siddiq, Hatlevik, Olsen, Throndsen, & Scherer, 2016) demonstrate that the digitalization of higher education brings the issue of quality and productivity of communication within university online communities to the forefront. The authors emphasize that effective interaction in a digital environment becomes a key factor in shaping the networked communicative culture of educational process participants.

A body of empirical and theoretical research (Darius, Gundabattini, & Solomon, 2021; Adedoyin & Soykan, 2023) confirms that digital technologies, amid the rapid transformation of education, are becoming a fundamental tool for organizing the learning process and maintaining communication between its key stakeholders - faculty and students. They create new opportunities for interactive engagement and cooperative problem-solving. As Müller and Mildenberger (2021) show, the transformation of university education today is associated with the transition from traditional approaches to personalized learning strategies, the use of digital technologies, and the development of online interactions.

Thus, the digital environment of a university is gradually transforming into a platform for building sustainable academic online communities, where learning and communication processes mutually reinforce each other. At the same time, the effectiveness of digital technology use is directly linked to the development of networked communicative culture (NCC) and adherence to digital etiquette norms, as these elements ensure constructiveness, respectfulness, and productivity in virtual interactions. In this context, the digitalization of education is considered not only as a technical process but also as a psychological phenomenon that influences value orientations and behavioral norms of participants in the educational process.

Despite a significant body of research, there remains an evident lack of targeted studies focused on monitoring the effectiveness of NCC and digital etiquette formation. Existing studies

tend to emphasize general aspects of digital competence, isolated elements of network interaction, or specific pedagogical practices (Imangalieva & Samalbek, 2021; Anton'tseva & Kudysheva, 2024). However, the issue of developing a comprehensive monitoring system capable of tracking the dynamics of NCC and DE development among faculty and students

in a university online environment remains underexplored.

To ensure the consistency and logical structure of the monitoring process, this study proposes an original innovative model for the formation of networked communicative culture (NCC) and digital etiquette (DE), developed by U.M. Abdigapbarova and A.E. Berikhanova (Figure 1).
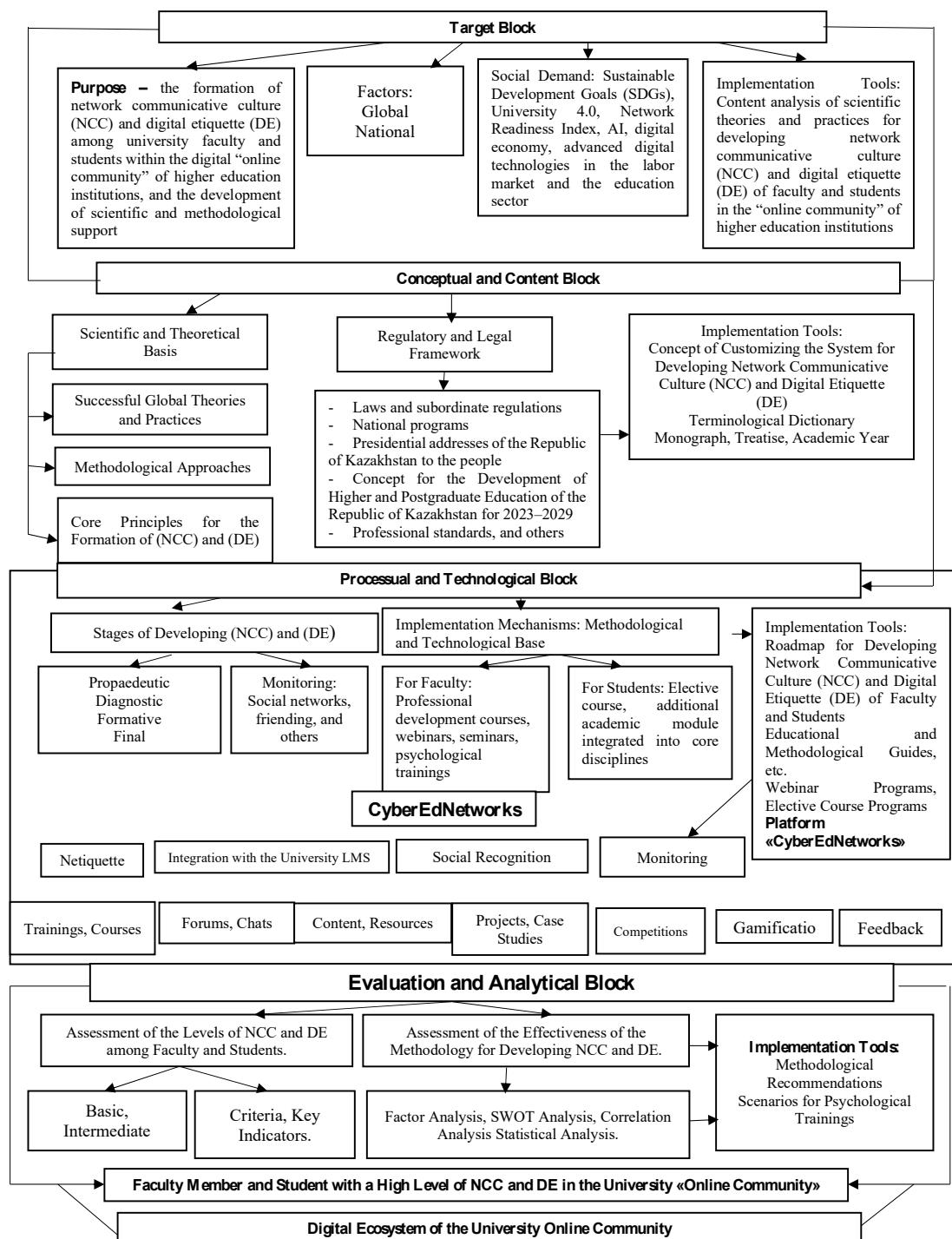
Figure 1: Innovative Model for the Formation of Networked Communicative Culture and Digital Etiquette among Faculty and Students within the University's Online Community

In accordance with the purpose of this article, our objective is to monitor the effectiveness of the model for forming networked communicative culture (NCC) and digital etiquette (DE) among faculty and students within the university's online community.

This model reflects the integration of pedagogical and psychological approaches, enabling systematic observation of the dynamics of NCC and DE development among faculty and students. Unlike existing approaches presented in international research (Siddiq et al., 2016; Adedoyin & Soykan, 2023), the proposed model is oriented toward the Kazakhstani educational context and takes into account the specific features of university online communities.

Materials and Methods. The study was conducted at Abai Kazakh National Pedagogical University. The sample consisted of a general population of 300 students from the Faculty of Pedagogy and Psychology, with the participation of 40 faculty members.

Table 1. *Monitoring Tools*

Methodology	Purpose of Application	Measured Indicators	Authors / Sources
Questionnaire on Network Communicative Culture (modified DCC)	Identification of the level of formation of Network Communicative Culture.	Frequency, quality, forms of communication	Hatlevik et al. (2015)
Diagnosis of Communicative Tolerance	Assessment of the ability for appropriate communication in the online environment	Tolerance, acceptance, and respect	V.V. Boyko
Methodology «Communicative Attitudes»	Determination of value orientations and personal attitudes	Value orientations, cooperation-oriented attitudes	M. Rokeach (adapted by Kazakhstani authors)
Digital Etiquette Questionnaire (Adaptation)	Study of knowledge and compliance with digital etiquette norms	Knowledge of digital etiquette rules, frequency of violations, adherence to norms	Tapalova (2024)
Case Method (situational tasks)	Assessment of the ability to apply network communicative culture (NCC) and digital etiquette (DE) in real situations	Correctness of chosen behavioral strategies, ethical level of decisions	Artamonova (2019), e-learning practices
Expert Assessment of Behavior in the online-community	Evaluation of participants' adherence to digital etiquette (DE) and network communicative culture (NCC) norms by moderators	% Percentage of correct and incorrect communications	L.M. Mitina, (2018)
Content Analysis of Digital Activity.	Examination of communication style and quality in LMS, chats, and forums	Speech practices, frequency of conflicts, adherence to digital etiquette norms	Krippendorff (2013) adapted
E-portfolio (Digital Portfolio)	Cumulative recording of the development of network communicative culture (NCC) and digital etiquette (DE) among participants	Projects, reflection, teamwork, online initiatives.	Tapalova (2024)

Longitudinal-study (slices)	Monitoring the dynamics of changes over the course of a semester (year)	Entry – intermediate – final indicators	Creswell J. (2014)

The monitoring system integrates psychological methods (questionnaires, tests, case studies) and digital analytics (content analysis, LMS data, e-portfolio).

Stages of monitoring the effectiveness of the model for developing NCC and DE among faculty and students within the university's online community:

1. Diagnostic Stage (Initial Assessment).

Purpose: To determine the initial level of networked communicative culture (NCC) and digital etiquette (DE).

Methods: Questionnaire on communicative culture (Hatlevik et al., 2015); Communicative Tolerance' Test (V.V. Boyko); Digital Etiquette Questionnaire (adapted from ISTE, 2017).

Outcome: Baseline level map (low / medium / high).

2. Formative Stage (Ongoing Monitoring).

Purpose: To track the dynamics of changes during the implementation of the model.

Methods: Case method (analysis of situations related to NCC and DE); Expert assessments (observation of online communication in LMS and chats); Sociometry (structure of network interactions).

Outcome: Identification of 'problem areas' (conflict tendencies, low level of etiquette, weak communication).

3. Interpretative-Corrective Stage (Feedback).

Purpose: To identify the causes of violations and deviations and make adjustments to the model.

Methods: Content analysis of online communications (Krippendorff, 2013); SWOT analysis of digital culture (adapted for university context); Reflective questionnaires for students and faculty.

Outcome: Recommendations for adjusting educational strategies.

4. Final Stage (Outcome Assessment).

Purpose: To evaluate the effectiveness of the implemented NCC and DE model.

Methods: Repeated questionnaires and tests (comparison with initial baseline levels); E-portfolio (assessment of accumulated digital practices and projects); Longitudinal study (comparison of dynamics over a semester/year).

Outcome: Individual and group development trajectories; statistical analysis of improvements in NCC and DE levels; conclusions on model effectiveness.

5. Presentation and Prognostic Stage (Meta-Stage).

Purpose: Dissemination of results and forecasting further development.

Methods: Presentation of findings at conferences and in publications.

Outcome: Scalable monitoring system, recommendations for other universities.

In the context of expanding the empirical toolkit and verifying the obtained research results, an analysis was conducted in the format of focus groups that included representatives of both participant categories (faculty members and students). The use of this instrument made it possible to obtain an in-depth understanding of the experience of interaction among subjects of the educational process within the digital environment of the university. Focus groups were regarded as an effective method for identifying common perspectives and representative positions of participants, as well as a tool for diagnosing key problems and current needs related to the formation of networked communicative culture and digital etiquette. During the discussions, open-ended and semi-structured questions were applied, which facilitated the expression of personal judgments and value orientations, as well as the free exchange of ideas and positions, ensuring the collection of spontaneous and in-depth responses. The primary purpose of conducting focus groups was to identify the specific characteristics of communicative interaction between faculty members and students within the university «on-line community» and to determine directions for its optimization.

In order to ensure the objectivity and representativeness of the empirical data, the

following measurement instruments were applied: the scale of networked communicative culture and digital etiquette, and the digital etiquette skills scale, the statistical verification of which confirmed a high degree of reliability (Cronbach's α = 0.889) and satisfactory construct validity (KMO = 0.858). Although in the study by Zheng, Li, Ding, and Huang (2023) this instrument was used primarily for the diagnosis of students, its adaptation proved to be relevant for assessing the digital ethics of faculty members as well.

The collected data were systematized and incorporated into a unified database reflecting the initial level of development of networked communicative culture and digital etiquette among both groups of respondents.

Results and Discussion. The results of the experimental study demonstrate the effectiveness of the innovative model developed by U.M. Abdigapbarova and A.E. Berikhanova in terms of the development of networked communicative culture and digital etiquette among undergraduate and graduate students.

Statistical analysis revealed that students improved their networked communicative culture skills to 58.544 out of 65 possible points, which is supported by a high level of statistical significance ($p = 0.002$, at $p \leq 0.05$). With respect to digital etiquette, statistical significance was also high, remaining within the established threshold ($p = 0.004$, at $p \leq 0.05$). In terms of the observed relationships between digital competencies and the academic performance parameters of respondents, no strong correlation was identified. This may indicate that the effectiveness of the model does not depend on students' academic grades, making it equally applicable for students with both high and low academic performance. The establishment of a comprehensive monitoring system that integrates diagnostic, formative, and interpretative-prognostic stages ensures the timely adjustment of educational strategies and contributes to enhancing the quality of digital interaction among the participants in the educational process.

Table 2 illustrates a comprehensive approach to assessing the effectiveness of the model for developing networked communicative culture

(NCC) and digital etiquette (DE) among students within the university's online community.

Its structure is based on four key criteria: cognitive, value-motivational, behavioral, and reflective. Each criterion is aligned with corresponding indicators, diagnostic methods, and quantitative measures, which makes it possible not only to record the level of development of individual components but also to identify the dynamics of their progression.

1. The cognitive criterion reflects the level of students' knowledge regarding the norms of online communication and the rules of digital etiquette. Test results indicate the distribution of students across levels ranging from low (<60%) to high (>90%), which enables the assessment of the effectiveness of educational activities aimed at enhancing digital literacy.

2. The value-motivational criterion captures the importance students attribute to digital etiquette and online communication culture. Questionnaire results revealed three levels of motivation (low, medium, high), demonstrating the readiness of a portion of students to integrate digital etiquette norms into their own online behavior.

3. The behavioral criterion reflects the actual skills of applying digital communication norms in practice: participation in discussions, communication correctness, and adherence to interaction rules. Content analysis and observation identified the percentage of students demonstrating high, medium, and low levels of online communication culture.

4. The reflective criterion assesses students' ability for self-analysis and awareness of their digital behavior. Survey data showed that a significant portion of students have a medium level of reflection, indicating the need for further development of this component through training sessions and case-based discussions.

Table 2 provides a systematic and holistic understanding of the level of formation of students' network communicative culture (NCC) and digital etiquette (DE). It enables the identification of not only strengths but also problematic areas requiring methodological and organizational interventions, as well as the development of individual and group trajectories for the advancement of digital culture.

Table 2. *Comparative Characteristics of the Level of Formation of NCC and DE Among Students*

Level of Network Communicative Culture and Digital Etiquette	Less than 60	60-75	75-90	90+
	86	69	50	83
	107		100	
Undergraduate				
Level of Network Communicative Culture and Digital Etiquette				
Master's Program	52		48	
Knowledge of digital etiquette rules and network communicative culture terminology.	35		265	
Motivation to adhere to online communication norms, significance of digital etiquette.	200		100	
Ability for self-analysis, awareness of digital identity.	85		125	

The results of the statistical analysis demonstrated a significant increase in the level of network communicative culture among students: the average score reached 58.54 points out of a possible 65, which is confirmed by a high degree of statistical significance ($p = 0.002$ at a threshold level of $p \leq 0.05$). With regard to digital etiquette, a statistically significant positive dynamic was also observed ($p = 0.004$ at $p \leq 0.05$), indicating the positive impact of the developed model on the formation of this competence. At the same time, a correlation analysis of the relationship between the level of digital competencies and students' ability for self-analysis and awareness of digital identity did not reveal a pronounced dependence. This result can be interpreted as evidence of the universal nature of the effectiveness of the proposed model, which demonstrates a positive impact regardless of the learners' level of awareness.

The empirical results reflecting the level of knowledge of digital etiquette rules and network communicative culture (NCC) terminology demonstrated that only about half of the students (48 respondents, <60%) had insufficient awareness, whereas a significant portion of respondents showed an above-average level (75–90% – 103 respondents, >90% – 112 respondents). This distribution indicates the presence of unevenness in the cognitive component of NCC. According to the studies of V. P. Sergeeva (2019) and A. E. Voiskunsky (2020), the cognitive component serves as the foundation for the formation of conscious digital identity, as knowledge of norms and terminology provides the basis for their subsequent internalization in communicative practice.

The data obtained for the motivational block (high motivation – 63 respondents, medium – 200 respondents, low – 37 respondents) show that the majority of students recognize the importance of digital etiquette and generally demonstrate a positive attitude toward adhering to it. These results align with the conclusions of L. S. Podymova (2018), who argues that the motivational-value component is a key condition for developing responsibility in the digital environment.

The indicators of communication culture level (high – 93 respondents, medium – 167 respondents, low – 40 respondents) suggest that about half of the respondents require targeted correction of communicative strategies, particularly in terms of constructive conflict resolution and the prevention of deviant forms of behavior in online interaction. In this context, the position of E. Sh. Yamburg (1997) is confirmed regarding the importance of combining cognitive and affective components in the formation of communicative culture.

Special attention should be paid to the data on the level of reflection and awareness of digital identity (high level – 96 respondents, medium – 134 respondents, low – 70 respondents). These results indicate that a significant proportion of students exhibit only a partial development of the ability for self-analysis in the digital environment. In accordance with L. S. Vygotsky's cultural-historical theory (1982), reflection ensures the internal regulation of behavior and shapes an individual's readiness for the responsible use of digital technologies.

Thus, the analysis of the obtained data allows us to conclude that the cognitive and motivational-value components of network communicative culture (NCC) among students are generally at a sufficiently high level; however, the communicative-behavioral and reflective aspects require targeted pedagogical support. This substantiates the relevance of implementing comprehensive monitoring of effectiveness and introducing an original model for the formation of NCC and digital etiquette in the university online environment.

According to 81% of teachers, this model makes it possible to effectively organize the process of developing network communicative culture and digital etiquette among students, providing new opportunities for the use of digital tools (webinars, online tests, and the possibility of a personalized approach to each student).

However, 19% of teachers expressed dissatisfaction with the use of digital tools due to the inefficiency of online formats for presenting complex content, difficulties in solving technical issues, and ensuring the active participation of all students. For some teachers, this required additional preparation for mastering new technologies, which posed particular challenges.

Table 3. *Evaluation by Teachers of the Effectiveness of the Model for the Formation of Network Communicative Culture and Digital Etiquette*

Opinion of Instructors	%	Number of respondents (if N = 100)	Characteristic
Positive Evaluation of Model Implementation	81%	81	Effective organization of the process of developing network communicative culture (NCC) and digital etiquette (DE); new opportunities for the use of digital tools (webinars, online tests, personalized approach to students).
Negative Evaluation of Model Implementation	19%	19	Challenges in using digital tools (limitations of online formats for complex content; technical issues; difficulties in engaging all students; the need for additional teacher training).

The evaluation of the effectiveness of the tested innovative model by U.M. Abdigapbarova and A.E. Berikhanova for the formation of network communicative culture and digital etiquette among teachers and students showed that the success of its implementation largely depends on comprehensive support from the digital educational environment. Comparative analysis of research demonstrates that in the absence of institutional support (in the form of professional development courses, methodological seminars, and training sessions), the use of digital tools is often limited to formal practices and does not ensure significant growth of digital competencies (Müller & Mildenberger, 2021; Adedoyin & Soykan, 2023). At the same time, the results of the approbation confirm the conclusions of authors emphasizing the importance of independent activity of learners and educators. Spontaneous mastery of digital technologies,

reliance on individual initiative, and the search for alternative solutions contribute to the development of autonomy and flexibility, which positively affects the assimilation of norms of network communicative culture and digital etiquette (Siddiq et al., 2016).

Thus, the approbation of the model revealed that its effectiveness is determined by the combination of two factors: systematic institutional support and the stimulation of independent activity of participants in the educational process. Such a combination ensures a balance between standardized guidance and an individualized trajectory for the development of digital competencies, which makes it possible to achieve sustainable results both at the level of academic performance and at the level of communicative culture.

Conclusion. Monitoring the effectiveness of the authors' innovative model for developing network communicative culture (NCC) and digital etiquette (DE) within the university «online community» confirmed its productivity and feasibility for integration into the modern education system. The dynamic nature of the model lies in its non-static design; it functions as an adaptive mechanism that accommodates changes in the digital educational environment and the transformation of communicative practices among students and faculty. The methodological emphasis on integrating NCC and DE through educational and technological solutions ensures a comprehensive approach: from fostering foundational knowledge and values to consolidating sustainable communicative and ethical norms in online interactions. The key stages of monitoring represent logically consistent benchmarks that structure the process of developing digital competencies, thereby enhancing the manageability and predictability of educational outcomes.

Systematic monitoring of online behavior (participation in online courses, discussion forums, social networks, and digital activity analytics) demonstrates that digital culture and ethics are most successfully formed within a practice-oriented approach, where the educational environment becomes a space for the real application of competencies. The methodological and technological foundation of the model (professional development courses, webinars, seminars, psychological trainings, elective courses, and modules integrated into core disciplines) confirms the importance of comprehensive support for the educational process, ensuring the sustainable development of digital competencies and communicative culture. The findings have both theoretical and practical significance. Theoretically, they expand the understanding of mechanisms for forming digital communicative culture and digital etiquette under the conditions of educational digitalization. Practically, the results can be integrated into the psychological and pedagogical training of students and the professional development of university faculty, as well as used in the design of digital transformation strategies for higher education institutions. Thus, the tested model serves as an instrument for optimizing educational activities, ensuring a balance between technical, communicative, and ethical aspects of digital interaction, which makes it highly promising for implementation in the practice of Kazakhstani universities.

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The Problem of Academic Well-Being of University Students: Analysis of Influencing Factors

Abstract

Introduction. Since the academic well-being of students at modern universities is determined by their desire for continuous learning and skill development, there is a need to pay close attention to the study of students' academic well-being through the prism of their personal perceptions. *Methodology and Methods.* The aim of this study is to examine the sources that contribute to student academic well-being from the perspective of two different groups of students, namely first-year and senior students of the Faculty of General Medicine in a developmental environment through training sessions. Focus groups were used as the main method of obtaining information. *Results.* Two student groups, including 25 first-year students from the Faculty of General Medicine and 27 fifth-year students from the same faculty, participated in this study to illustrate the overall picture of sources of academic well-being. According to the results of the empirical study, first-year students demonstrated three points of view: an emphasis on the pleasure of balancing study and life, personal values and aspirations, and academic activity. The opinions of senior students focused on internal sources related to professional development, concerning their targeted academic development and the implementation of activity through self-management. Practical suggestions are offered for optimizing the development of a psychological and pedagogical curriculum to better support students' academic well-being. *Scientific novelty.* The main sources contributing to the academic well-being of students in the context of interactive learning at the university have been identified. *Practical significance.* The developed approach can be applied to improve the quality of the educational process, achieve certain goals in interactive learning and maintain the well-being of students in both personal and professional activities.

Keywords: personal well-being, academic success, medical university students, academic well-being, training sessions

Introduction. Since the start of the pandemic, students' academic well-being has been a hot topic for higher education researchers. Our main task in the field of scientific and pedagogical activity is to create educational conditions conducive to the successful personal and professional development of highly qualified specialists. As defined by foreign scientists, academic well-being is "a dynamic state and an indicator of a person's perseverance in learning, academic achievements and the development of competencies" (Huamán & Berona, 2021), is understood as the influence of student engagement on the school climate and subjective well-being of the individual (Na'imah et al., 2025), the role of resilience and social support in the psychological well-being of university students (Anjum, 2022), it is also a kind of relationship between positive emotions of a person and a sense of satisfaction with personal choices in learning, the learning environment. (Tuominen-Soini et al., 2012), the power of perseverance and motivation on academic success and personal well-being (Obeng et al., 2025).

It is well known that medical education is inherently a complex and demanding process, so it is only logical that students are subject to significant academic, emotional, and physical demands. Practice shows that insufficient academic performance to meet all these requirements can lead to poor performance,

increased stress, and an increased risk of expulsion for students at medical universities. In medical education, the well-being of students is considered from all sides (including psychology, sociology, and medicine) (Eleje et al., 2025; Saad et al, 2025; Van der Merwe et al, 2020; Luibl et al), thereby identifying various adaptation problems in the educational process faced by students, thus providing an understanding of the complex components of well-being.

It is believed that personal involvement influences the relationship between academic resilience and subjective well-being among students. Medical university students generally perceive the educational environment positively and demonstrate academic resilience when faced with academic challenges and difficulties in achieving well-being while studying and living away from home. According to Van der Merwe L.J. et al., "the ability of the individual to cope with difficulties will ensure the well-being of future medical professionals" (Van der Merwe et al, 2020). Students' adaptability and well-being are enhanced by the help of friends and fellow students in the form of mentoring (Akinla et al, 2018).

The research context chosen is the environment of developmental learning through training, when trainings help to recreate a future practical situation and thereby develop them, while teachers become coordinators who support student learning (Kolmos et al., 2021). It turns out that the comprehensive development of the student's personality occurs through interaction in practice-oriented learning. The study of the question "How do interactive learning environments (trainings) provide diverse sources of support for students' learning and contribute to their academic well-being?". It was determined by the scientific study IRN AP19678139 "Assessment of socio-psychological opportunities for intensive growth of the well-being of students in Western Kazakhstan". Existing research on student well-being has shown that self-compassion and self-kindness, academic motivation, and single-mindedness enhance mental and academic well-being.

Materials and Methods. Due to its rich history, the concept of "well-being" is quite interesting to define: from a hedonistic point of view, it is a feeling of happiness and joy, while from an eudaimonistic point of view, it is a dynamic process of life with all stages of personal development.

Scientific and theoretical research in this field shows a variety of understandings and definitions of the phenomenon of "well-being," but there is still no single definition. Scientists' keen interest in personal well-being at universities is explained by the acquired "experience of student learning, which is called academic well-being" (Perkins et al., 2021). Hascher T. demonstrates his definition "as an emotional experience characterized by the predominance of positive feelings and perceptions of school, people at school, and the school context" (Hascher, 2021), while Fiorilli C. and a number of other scholars believe that academic well-being is "self-efficacy, identity, personal autonomy, perceived difficulties, and engagement in the learning process" (Fiorilli et al., 2017).

Global educational experience has revealed methods for assessing the academic well-being of students, mainly in general education schools (subjective well-being scale, psychological well-being methodology, including PASS, PISA, PERMA, etc.). Recent studies show a causal relationship between "the deterioration of a student's health and their poor academic performance and stress" (Barbour & van Meggelen, 2023). Conversely, "happiness and joy from success in learning lead to academic well-being of students" (Kovich et al., 2023).

We agree with the assertion that academic well-being is directly dependent on the value-volitional sphere, emotional-cognitive processes and states, as well as the nature of interaction with the surrounding reality, including "interpersonal relationships and conditions" (Eloff et al., 2022). This is, according to Brooker A., Baik C., and Larcombe W., academic well-being as "a student's personal experience and achievements gained through their values and external circumstances" (Brooker et al., 2017). Thus, internal sources include the value-

volitional sphere, goals, and self-identification, while external sources include interpersonal relationships and learning conditions. All social connections of learners are undoubtedly important, literally every social role they play during this period of time.

Of course, constructive feedback and respectful relationships among medical university students create a positive attitude among students, as they are signs of professional recognition and self-identification in future medical practice. Good family and friendly relationships also contribute to their academic well-being (Govorova et al., 2020). Therefore, comprehensive efforts by all authorities are necessary to promote the academic well-being of students, including internal university policies (mission, policies, statutes, youth policy), academic content (programs, syllabi, auditing and monitoring the quality of educational services offered), and the "system of social and psychological support for students, university infrastructure" (Eloff et al., 2022).

This study of well-being at the regional level is being conducted at one of the medical universities of the Republic of Kazakhstan, namely the Marat Ospanov West Kazakhstan Medical University in the city of Aktobe. The study involved faculty members and first- and fifth-year students enrolled in the bachelor's program in medicine at this university. The curriculum for this specialty includes general education, basic, specialized, and elective courses, which together form the professional competence of a doctor as a modern competitive specialist. Forms of education, such as classroom (lectures, seminars, laboratory classes, independent work under the guidance of a teacher, etc.) and extracurricular (internships, etc.), in fact contribute to the academic well-being of students, although the mechanisms of their improvement require clarification. Therefore, there is a need to study the sources of the formation of students' academic well-being in an interactive learning environment.

As a theoretical basis, we have taken internal and external sources of academic well-being, which are studied by the «Likert scale tool with 37 points» (Chen, Du, et al., 2023). Students' opinions about the resources of their academic well-being are necessary for the methodological development of the science of well-being (Lomas et al., 2021). We decided to use the proposed internal and external areas of personality interaction within the framework of four substructures as a questionnaire (Table 1),

Table 1. *Focus group questionnaire*

Domains	Topics	Statements
Internal sources	Personal values	1) I am satisfied with my education; 2) I am motivated to learn; 3) I have high goals in terms of good education and career growth; 4) I choose a study program that suits my goals and interests; 5) I can be responsible for my own education; 6) I can develop my professional competencies during the learning process; 7) I am able to interact with different people; 8) I am able to be financially stable in my studies; 9) I have harmony in my personal life and studies;
	Agency actions	1) I understand the connection between my future goals and academic achievements; 2) I can handle any situation; 3) I can correctly formulate goals according to my interests and abilities; 4) I have good time management skills; 5) I can make reasonable decisions; 6) I motivate myself to realize my personal potential; 7) I am capable of completing any educational tasks; 8) I am stress-resistant in the learning process.

External sources	Interaction in learning environments	1) I communicate effectively with all people; 2) I can argue my point in debates and discussions; 3) I can work in a team; 4) I can coordinate joint actions to achieve a common goal; 5) I take an active role in teamwork; 6) I am respected by my colleagues; 7) I feel psychologically safe in the learning environment; 8) I am aware of the correct assessment of my academic performance;
	External support	1) I share my achievements with my family and friends; 2) I have a good relationship with my teachers; 3) I always share my learning experiences with my friends; 4) I have experience communicating with professional communities; 5) I have access to all the possibilities for searching for information on the Internet; 6) I have opportunities to receive social and psychological support.

Results. Opinions of 25 students (14 women and 11 men) in their first year and 27 students (17 women and 10 men) in their fifth year of medical school who had participated in training sessions at the psychology department on sources contributing to their academic well-being were obtained and analyzed.

The focus group interview procedure was conducted in a standard format during classroom sessions on the subjects of "Psychology" for first-year students and "Communication Skills in Medical Practice" for fifth-year students at the Department of Psychology during the 2024-2025 academic year. The questionnaires were printed and distributed to students, and all ethical rules and standards were observed in advance. To answer the question "Which sources do you think influence your academic well-being?", participants were asked to rate a number of statements on a scale from the most significant (+4) to the least significant (-4). Personal information such as gender and course of study was also collected.

Three factors were identified in relevance group 1, emphasizing: a) enjoyment of the balance between study and life (factor 1); b) personal values and aspirations (factor 2); c) academic activity (factor 3).

Factor 1: "Enjoyment of studying and life". Ten participants, including six women and four men, showed a significant load on factor 1, emphasizing the importance of enjoying studying while maintaining a balance between studying and personal life. The academic well-being of these participants was supported by a sense of enjoyment of learning itself and motivation. Their career success was driven by their academic success, their ability to solve complex problems, and their ability to work effectively in a team. This was reflected in their high assessment of the quality of communication. According to the participants, they managed to find a balance between their studies and their personal lives, which allowed them to achieve academic well-being. This was made possible by their self-control and responsibility.

Interestingly, the 18 participants (twelve girls and six boys) in Factor 1 devalued the presence of clear goals and reflecting with colleagues on their progress in working toward common goals as statements that fully support academic well-being. The statements "challenge yourself to reach your full academic potential" and "monitor your academic growth to achieve your goals" were rated lowest due to their negativity: "For me, academic achievements are not that important. After all, I just want to live, and not constantly control everything and achieve something".

The discovery was the fact that family and friends were not very involved in the academic life of students, especially in their academic well-being and success: "In fact, my education and all my achievements are necessary for me and depend only on me. My closest circle of friends and family can be happy for me or not,

but nothing depends on them". Even external assessments of their education, such as grades in teachers' journals, were not that important to them.

Factor 2 showed that 17 participants in this group (nine girls and eight boys) highly valued their personal beliefs, emotions, and aspirations. These values include the desire to make a successful career, motivation and interest in learning, and the comfort of being in any environment. It was enough for these guys to understand the close relationship between a successful career and academic well-being. According to factor 1, academic motivation and a sense of personal success were important sources for students: "I like my contribution to my future".

They also noted the importance of a supportive educational environment, as they needed to feel comfortable in their physical learning environment in order to maintain their academic well-being: "I need comfort and understanding from others, otherwise I won't be able to study comfortably". There were also those who did not prioritize harmonious connections between their studies and their personal lives, teamwork, effective communication, and friendly relationships.

The next factor was factor 3, which included 17 students (six women and eleven men) who valued a high level of responsibility and competence. Their strong desire for personal and team success and well-being sets them apart from others. The motivation for everything was the belief that the ability to find the right solutions in educational and professional tasks, as well as stress resistance, would lead to good work in the future, and support from others helped students in this. A sense of personal comfort and group self-identification helped them achieve academic well-being.

The focus group method allowed us to understand the thoughts of different groups of students about the main factors of academic well-being: the prevailing needs of students are to enjoy themselves through a balance between study and personal life; between life values and personal aspirations; between internal motivation and academic well-being.

Discussion. Based on the identified points of view, first-year and fifth-year students in the Medicine educational program emphasized internal motivation in promoting their academic well-being, especially in terms of enjoyment of what they are studying and feelings of motivation. If we compare the opinions of the groups, it is obvious that undergraduates, compared with freshmen, are already focused on practical activities, careers and adulthood (many of them are already married and have children). Internal sources of academic well-being, such as the pursuit of professional development in medicine, have become dominant. As a result of the discussion, it is clear that internal sources play a more important role in maintaining the academic well-being of students. Therefore, willingness to study together, effective communication, and self-management contribute to the academic well-being of students (Bowman et al., 2019).

It should be recognized that some external sources have not been implemented at the university, which is a clear omission of the teachers. For example, students may feel shy and afraid to seek social and psychological help because of ridicule. Only through the competent actions of the university administration in establishing a comprehensive system of social, psychological, and pedagogical support, as well as creating a psychologically safe learning environment, is it possible to improve the psychological culture of students. According to scientists, students need to be taught not to be afraid of mistakes and difficulties, because "mistakes are learning opportunities, and wrong actions are also experience" (Molloy et al., 2021).

We have already noted that close relationships within the family and among friends are still not a fundamental source of academic well-being for students. Nevertheless, despite mental characteristics (respect for elders, emotional connection with parents, reverence for traditions, etc.), our young students prefer to be independent in their choices and actions and rely only on their own inner strength. Deep family relationships are important for setting strategic goals and life plans for young people, but they are not leading (Kovic et al., 2023).

Undoubtedly, achieving and strengthening academic well-being requires individual and institutional efforts. It is important for the faculty of the Medical University to understand the specifics of the educational process, the specifics of the curriculum, and other sources that contribute to improving the academic well-being of students. Given the personal characteristics and necessary character qualities that play an important role in their academic well-being, teachers should nevertheless learn how to ensure the further academic well-being and professional development of specialists in the role of facilitators (Barbour, Meggelen, 2023; Kolmos et al., 2021).

All higher education institutions need to pay more attention to student academic well-being when developing educational programs. The culture of a modern university should be focused on the culture of academic well-being, should provide students with opportunities to use all sources to satisfy their own needs for academic well-being (Barbour, Meggelen, 2023; Chen et al., 2023). For example, we implemented scientific results into the educational activities of University No. 73 on June 25, 2025, under the name "Training programs for promoting well-being in the university environment". The form of implementation is training scenarios for promoting well-being based on social communication in the educational process at Marat Ospanov WKMU in all practical classes, trainings, and master classes.

Training, in a general sense, is interactive learning aimed at developing skills. Unlike other forms of learning and knowledge transfer (lectures, seminars, etc.), taking into account the training features (activity, interactivity of participants, activity modeling, imitation of individual physical and cognitive actions, orientation towards behavior change (algorithms), scenarios (sets of algorithms for various tasks and situations), motivation of behavior, etc. The systematic use of training exercises in all types of classes and the training sessions themselves at the Department of Psychology allows all educational goals to be achieved. This study took into account training exercises and classes in the subjects "Psychology" for first-year students and "Communication Skills in Medical Practice" for fifth-year students.

Our educational programs should also provide flexibility and clarity in terms of content and structure, so that students adjust their educational trajectory in a timely manner. Analyzing the results of focus group interviews, external factors were identified as dominant sources of academic well-being for first-year students. In order to correct their educational activities, university teachers and administrators should provide them with academic freedom of choice, depending on their needs and personal characteristics, expand opportunities for interdisciplinary and intercultural cooperation, and strengthen socio-psychological support at the beginning of their studies at the university.

Undergraduates, on the contrary, prefer internal resources, so they need to be given the opportunity to study on the job and practice medical practice in order to introduce future doctors to professional medical communities and enhance their professional and general competencies. Despite the availability of support services – the Professional Growth Center https://ospanov.university/centers/center-prof_rost.html, the Professional Skills Center https://ospanov.university/centers/cpn/cpn.html, the Nursing Excellence Center https://ospanov.university/centers/center-sestr_delo.html, Social and Psychological Support Service https://ospanov.university/services/service-psiho.html, Youth Affairs Service https://ospanov.university/services/service-youngs.html). We think that, in general, all medical universities create a favorable climate for the academic well-being of their students, as this affects the number of applicants and the quality of graduates.

Conclusion. The topic of well-being, especially academic well-being, will always be relevant for education, since corrective actions on the part of subjects of education should be constant and aimed at improving the quality of education. So, by studying the personal views of future doctors in different courses of study, we focused on existing internal and external

sources of academic well-being. The obtained results of the focus group interview method helped to see the overall picture of students' academic well-being, their attitude towards it, and identify important factors as sources for achieving academic well-being.

The subject of the study was considered in the context of medical education, in particular, an interactive learning environment using training exercises and the training session itself in the first and fifth years of study as part of a comprehensive educational program. It was found that academic well-being remains a complex phenomenon, which is directly influenced by many factors. The factors identified by the participants of our focus group

as the main sources of academic well-being are quite understandable and understandable, but still need to be further clarified and studied from a methodological perspective. Based on this research, new studies may be conducted in the future, followed by interviews with large groups of students with different levels of education and different professional backgrounds.

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Psychological and Pedagogical Conditions for the Interiorization of the Values of "Rukhani Zhangyru" in the Public Consciousness of Kazakhstan

Abstract

Introduction. Kazakhstan's state program Rukhani Zhangyru (2017) aims to shape national mentality through cultural modernization values. However, official value proclamation does not guarantee individual consciousness assimilation, requiring psychological-pedagogical analysis of the interiorization process. *Methodology and Methods.* An integrated qualitative-quantitative approach was employed, combining questionnaires, semi-structured interviews, and content analysis. The study involved 198 respondents aged 18-50, including university students (n=86), faculty members (n=48), and cultural institution employees (n=64) from diverse Kazakhstan regions. Research was conducted January-July 2025, utilizing methodological triangulation and examining cognitive, affective, and behavioral levels of value assimilation. *Results.* Analysis revealed 72.2% of respondents demonstrated program awareness, but only 28.4% could reproduce key directions. Visual symbolism was recognized by 54.8%, yet only 17.6% could interpret graphic meanings. At the affective level, 48.3% expressed positive attitudes, with strongest responses to local identity components. The behavioral component proved least pronounced, with only 21.5% expressing readiness to follow promoted values and 17.9% reporting actual participation. *Scientific Novelty.* This study represents the first comprehensive psychological-pedagogical analysis of value interiorization within the Rukhani Zhangyru program, examining multilevel processes across diverse social groups in Kazakhstan's cultural modernization context. *Practical Significance.* Findings provide evidence-based recommendations for educational institutions and policymakers, identifying key psychological-pedagogical conditions including emotional engagement, cultural relevance, dialogic interaction, and activity-based implementation that facilitate effective value transmission and sustainable public consciousness assimilation.

Keywords: value interiorization, Rukhani Zhangyru, psychological and pedagogical conditions, education, learner-centered approach.

Introduction. Amid the profound sociocultural transformations taking place in contemporary Kazakhstan, the issues of forming and interiorizing values that reflect the specificity of national identity, the strategic directions of development, and the ideological foundations of civic consolidation are acquiring particular relevance. In building a model of sustainable social development, Kazakhstan has been consistently implementing a policy of cultural modernization grounded in the ideas of symbolically reinterpreting historical experience and renewing public consciousness. A central element of this policy is the state program Rukhani Zhangyru, announced in 2017 as an ideological framework for shaping a new Kazakhstani mentality oriented toward patriotism, national distinctiveness, pragmatism, and openness to the global world (Satbayev University, 2023).

The values embedded in the Rukhani Zhangyru program are positioned as fundamental semantic guidelines defining the image of the future Kazakhstani society. However, the mere presence of values in strategic documents and their dissemination in the public sphere do not guarantee their sustainable assimilation at the level of individual consciousness.

Empirical studies show that Kazakhstani university students maintain basic patriotic and cultural orientations while simultaneously exhibiting receptivity to individualistic and pragmatic value frameworks (Zharkynbekova, Shakhputova, Galiyeva, Absadyk, 2025). This indicates the necessity of pedagogical support for the interiorization process, oriented toward emotional engagement, personal identification, and cultural relevance (Kabylov, 2024).

Interiorization, as an analytical category, encompasses the interrelation of cognitive, affective, and behavioral components of value acquisition. From the perspective of the psychological–pedagogical approach, it is conditioned by a range of factors: the age and personal characteristics of socialization subjects; the specific features of the environment–educational, cultural, and media-related; the forms and quality of pedagogical influence; and the nature of societal and interpersonal interactions (Pulgar, Soto, Reyes, 2022; Wei, Zhang, Wang, 2022).

In recent academic literature, there has been a growing interest in the issues of value-based socialization, moral and spiritual education, and the formation of civic identity (Kassym, 2021; Aysyltaeva, 2023). At the same time, analyses of the Rukhani Zhangyru program often focus on discursive, institutional, or administrative aspects, while leaving in the background the deeper mechanisms of individual value acquisition – cognitive, emotional, and motivational (Shnarbekova et al., 2023). These mechanisms are decisive for the actual effectiveness of educational policy, its sustainable impact on personal development, and, consequently, the stability of the social order.

The relevance of this study lies in the need to conceptualize the Rukhani Zhangyru program not only as a strategic political and cultural document, but also as a system for educational transmission of values that requires a comprehensive psychological–pedagogical analysis. Of particular importance is the study of the extent to which the values presented in the program are interiorized by various social groups, and the specific pedagogical, social, and psychological conditions that contribute to this process.

The aim of the research is not only to assess awareness and attitudes, but to identify and empirically substantiate specific psychological–pedagogical conditions – dialogic instruction, mentorship, cultural contextualization, activity-based practices, and conceptual clarity – that enable the interiorization of the values of the Rukhani Zhangyru program in the public consciousness of Kazakhstan.

The research objectives are:

1. To conduct a theoretical and methodological analysis of the concepts of interiorization, value consciousness, and educational influence in the context of pedagogy and psychology;

2. To identify the key values promoted within the framework of the Rukhani Zhangyru program;

3. To examine the characteristics of perception and acquisition of these values among representatives of different age and social groups;

4. To determine pedagogical practices that facilitate the effective transmission and assimilation of values;

5. To identify psychological mechanisms influencing the degree and depth of interiorization;

6. To develop recommendations for optimizing the psychological - pedagogical conditions for the formation of value consciousness based on the Rukhani Zhangyru program.

Within the framework of the study, the following hypotheses are advanced. It is assumed that the use of dialogic formats contributes to the enhancement of affective and behavioral indicators. The presence of mentorship or role models determines a more pronounced behavioral enactment. Cultural contextualization, in particular the use of Tugan zher narratives, strengthens emotional acceptance. Activity-based practices mediate the transition from the cognitive level to behavioral implementation. Conceptual clarity of value constructs fosters deeper cognitive comprehension and reduces ambivalence (Buribayev et al., 2025).

The concept of interiorization has an interdisciplinary nature and is employed in various scientific paradigms – from philosophical anthropology to pedagogy and social psychology. In the classical interpretations of J. Piaget and L. S. Vygotsky, interiorization is described as the process of transforming external social activity into the internal plane of consciousness, resulting in the formation of cognitive structures, attitudes, and personal values (Piaget, 1950; Vygotsky, 1983). This process is, in essence, the central mechanism of socialization, ensuring the transition from external influence to internal self-regulation of behavior.

In pedagogy, interiorization is viewed as a key stage in the assimilation of moral and value experience, consolidated through teaching, upbringing, and cultural mediation. Contemporary Kazakhstani studies confirm the importance of ethnopedagogical components in fostering positive attitudes toward the traditional values of Kazakhstani society: a course in ethnopedagogy significantly improved the value orientations of future educators (Toleubekova et al., 2022).

From a psychological standpoint, the interiorization of values involves passing through several levels: cognitive, affective, motivational, and behavioral. The effectiveness of this process depends on the learner's position, engagement, identification, and the nature of pedagogical interaction – an approach actively supported by theories of student-centered learning and competence-based education (Abdigapbarova, 2023).

The Rukhani Zhangyru program offers values including national identity, tradition, and innovation. However, their interiorization requires a deep understanding of the mechanisms of personal-level integration, as confirmed by contemporary expert educational models (Yembergenova, 2024; Malikova, 2024).

This study applies the conceptual apparatus of symbolic interactionism – an approach based on the idea that values are created and interpreted through social interaction and symbols, and that their meaning is determined in the process of communication rather than being inherent in the phenomena themselves (Mead, 1934; Blumer, 1969).

Analyzing the Rukhani Zhangyru program from this perspective makes it possible to consider not only the officially transmitted meanings, but also their subjective interpretation, emotional re-evaluation, and engagement by various social groups. This is corroborated by research in ethnopedagogy showing that a specialized course contributed to a marked increase in positive attitudes among future educators toward traditional Kazakh values (Toleubekova et al., 2022).

Thus, the study is grounded in an interdisciplinary integration of the theoretical frameworks of pedagogy, psychology, social philosophy, and cultural studies, enabling the analysis of value interiorization as a multilevel process of meaning-making, upbringing, and identity formation in the context of Kazakhstani society. In this study, interiorization is conceptualized as a condition-dependent process that unfolds across cognitive, affective, and behavioral layers. To make the analysis more precise, we distinguish a set of psychological–pedagogical conditions that either facilitate or hinder this process. Based on theoretical insights and preliminary observations, five such conditions were identified: dialogic instruction, mentorship, cultural contextualization, activity-based formats, and conceptual clarity of value constructs.

Each condition was operationalized through measurable indicators and aligned with the three-component model of interiorization. For example, dialogic instruction was traced through the presence of open-ended questioning and reflective prompts in survey and interview data. Mentorship was indicated by references to role-models and tutor support. Cultural contextualization was captured by appeals to Tugan zher and local identity in discourse. Activity-based formats were identified through reports of participation in projects and volunteering. Finally, conceptual clarity was assessed through the ability to define and interpret key notions such as ulttyq kod or "new Kazakhstani identity". This operationalization makes it possible to examine not only awareness

of the program's values but also the concrete mechanisms through which they are internalized in educational and cultural environments.

Materials and Methods. The present study is grounded in the principles of an integrated qualitative–quantitative approach, enabling the combination of empirical data with theoretical–analytical reflection on the interiorization of values as a psychological–pedagogical phenomenon. The use of methodological triangulation ensured verification of the findings through diverse sources, data collection methods, and analytical strategies, thereby achieving a high degree of reliability and validity in the conclusions drawn. The research was aimed at identifying the perception and level of interiorization of the key values of the Rukhani Zhangyru program among various social groups, as well as determining the factors that facilitate or hinder the deep assimilation of these values in the public consciousness.

The research design was exploratory–analytical in nature and comprised a combination of quantitative and qualitative procedures: questionnaires, semi-structured interviews, and content analysis of official and media texts. The study was conducted in three stages. The first, preparatory stage (January–February 2025) involved formulating research objectives, selecting and developing research instruments (questionnaire, interview scripts), defining the target sample, and selecting texts for analysis. The second stage (March–May 2025) encompassed the collection of empirical data, the conducting of interviews and surveys, and the initial systematization of the information obtained. The third, analytical–synthesizing stage (June–July 2025) consisted of interpreting the data, identifying stable patterns in the perception and behavioral implementation of values, and formulating typologies and pedagogical recommendations.

The total sample comprised 198 respondents aged 18 to 50. The sampling strategy was both purposive and stratified. The study included representatives of various professional groups with experience of engagement with the Rukhani Zhangyru program through participation in educational, cultural, or administrative initiatives. Specifically, the survey covered university and graduate students (n = 86), faculty members of higher and secondary specialized educational institutions (n = 48), and employees of cultural institutions and public organizations (n = 64). The geographical scope included different sociocultural regions of Kazakhstan, encompassing both major urban centers (Almaty, Astana) and peripheral areas, which allowed for the identification of regional differences in the perception and interiorization of the program's values. The study was conducted in accordance with ethical research standards. All participants were informed about the aims of the study and gave voluntary consent. Anonymity and confidentiality of responses were guaranteed.

The questionnaire, specifically developed for this study, contained both closed and open-ended questions. It was designed to assess the level of awareness of the program, the associative framework formed, personal acceptance of value orientations, and subjective evaluation of the effectiveness of the mechanisms for their transmission. The main sections of the questionnaire were aligned with a three-component model of interiorization: cognitive (awareness and understanding), affective (emotional attitude and resonance), and behavioral (willingness to engage in actions consistent with the proclaimed values) levels.

For in-depth analysis, 21 individual semi-structured interviews were conducted with representatives of the three target categories. The interviews made it possible to identify not only verbalized knowledge of the program's values but also the underlying mechanisms of interpretation, resistance, rethinking, or identification with them. Particular attention was paid to the emotional coloring of statements, narrative structures, personal meanings ascribed to various aspects of the program, and the social environment in which value orientations were formed. In addition to individual interviews, three focus groups were organized (8–10 participants each; total n=28; 60–75 minutes). Sessions were audio-recorded, transcribed verbatim, and thematically analyzed using the same coding framework as for interviews.

The content analysis encompassed 42 texts, including regulatory documents, implementation reports, public speeches, and media publications. Intentional and semiotic analysis techniques were applied, allowing for the identification not only of the frequency of value mentions but also of their discursive representation, lexical framing, symbolic content, and contextual boundaries. The repertoire of dominant values, their hierarchy, prevalent narrative formats, and stylistic markers were recorded.

Quantitative survey data were processed using descriptive statistics, including frequency and percentage analysis, as well as intergroup comparisons and correlation analysis by interiorization level and respondents' social affiliation. Qualitative data from interviews and open-ended survey responses were subjected to thematic analysis following Braun and Clarke's (2006) methodology, identifying recurring semantic units, emotional patterns, individual reactions, and interpretative strategies. The analysis was conducted manually, followed by verification of results through collegial expert discussion.

The content analysis of texts employed a categorical approach with a pre-developed coding framework that included the program's core concepts ("national identity", "modernization of consciousness", "pragmatism", "historical continuity" etc.). Quantitative recording of mentions, analysis of lexical formulas and syntactic structures, identification of modal constructions, and semiotic representations were performed. The comparison of data from questionnaires, interviews, and texts made it possible to conduct intersubjective analysis and develop stable typologies of value perception and assimilation. Reliability and validity. Internal consistency of survey subscales was assessed with Cronbach's α and item–total correlations. Inter-coder reliability for content analysis was measured using Cohen's κ on a 20% double-coded subset ($\kappa \geq 0.70$ acceptable). Construct validity was supported by expert review and alignment with the three-component model of interiorization.

Thus, the mixed-method design applied in the study made it possible to capture the multifaceted nature of value interiorization, trace the cognitive, emotional, and behavioral characteristics of this process in various social groups, and identify the psychological–pedagogical patterns determining the successful assimilation of values in the context of Kazakhstan's sociocultural modernization.

Results. The analysis of the collected empirical data provided a comprehensive understanding of the degree of interiorization of the values promoted by the Rukhani Zhangyru program in the public consciousness of various social groups. Officially launched in 2017 as the ideological foundation for Kazakhstan's cultural modernization, the program, at the level of mass perception, demonstrates a heterogeneous and predominantly fragmented pattern of interiorization. Methodological triangulation - combining questionnaires, semi-structured interviews, focus groups, and content analysis of media materials – made it possible not only to quantitatively assess the level of value assimilation, but also to identify qualitative differences in perception across social and age groups.

The overall level of awareness of the program's content proved to be relatively high: 72.2% of respondents confirmed familiarity with its main provisions. However, only 28.4% were able to reproduce its key directions and conceptual guidelines. This indicates a predominance of superficial knowledge alongside relatively stable reproductive awareness that does not evolve into conceptual comprehension. Focus group data show that such knowledge is often limited to "recognition of the title" and certain slogans, without understanding their intended purpose.

The program's visual symbolism - its logo, color palette, font, and the slogan Bolashakka bagdar: Rukhani Zhangyru ("Course towards the future: spiritual modernization") – was recognized by more than half of respondents (54.8%). However, only 17.6% were able to interpret the meaning of the graphic elements and link them to the program's conceptual foundations. Thus, in the perception of respondents, the symbolic component retains a predominantly decorative function without

transitioning to a semantic level, indicating a low degree of visual–semiotic interiorization. Interviews confirmed that visual elements are more often associated with an "official campaign" or "state branding" than with personal value orientations.

The results of the questionnaires and semi-structured interviews made it possible to identify a wide spectrum of associative representations formed around the concept of Rukhani Zhangyru. The most frequently mentioned notions included "modernization", "spiritual renewal", "national traditions", "civic identity", and "patriotism". However, the composite associative matrix also consistently contained negative or alienated connotations such as "formality", "official ideology", and "bureaucratic initiative". This gap between the program's positive discourse and the partial skepticism evident in its reception points to the presence of emotional–value alienation. In focus groups, such responses were accompanied by metaphors like "a slogan without continuation" or "a poster on the wall", which reflect distrust toward the program's practical implementation.

The three-component model of interiorization – comprising cognitive, affective, and behavioral levels – enabled differentiation of the depth of assimilation of the transmitted values. At the cognitive level, the majority of respondents (69.5%) demonstrated a general understanding of the program's principles. However, closer analysis revealed that only 22.8% could explain the content of such key concepts as ulttyq kod ("national code") or zhana kazakhstandyq bolmys ("new Kazakhstani identity"). Even lower figures were recorded for the concepts of "pragmatism" and "openness to the world," indicating their lack of clarification and weak cognitive elaboration. Content analysis of media materials confirmed that these notions are visualized less frequently and lack explanatory support in mass communication.

At the affective level – emotional acceptance and subjective engagement – 48.3% of respondents expressed a positive attitude toward the program's content. Meanwhile, 32.4% took a neutral position, and 19.3% displayed

signs of alienation or distrust. Particularly strong emotional responses were elicited by components associated with local identity and cultural continuity –specifically, *the* Tugan zher ("Homeland") initiative, which generated a sustained emotional resonance regardless of age or social status, especially among residents of rural areas and small towns. In interviews, these respondents emphasized that "returning to one's native places" and "preserving the memory of ancestors" were more important to them than abstract modernization slogans.

The behavioral component of interiorization proved to be the least pronounced. Qualitative coding showed that absence of dialogic formats and mentorship co-occurred with low behavioral enactment, while cultural-contextual narratives (e.g., Tugan zher) enhanced emotional resonance but stalled at the behavioral stage without activity-based opportunities and social reinforcement. Only 21.5% of respondents expressed readiness to practically follow the promoted values, while actual experience of participation in projects, initiatives, or events within the program framework was reported by just 17.9%. Regular behavioral enactment of the principles (e.g., participation in volunteer and cultural initiatives, development of local projects, self-education on program-related topics) was observed primarily among students engaged in university or informal educational environments. Conversely, for the majority of respondents (64.7%), the program's values, despite verbal endorsement, do not translate into behavioral orientations and exert no regulatory influence on life practices. Focus group participants noted that the absence of material and organizational support from the state is a key barrier to engagement.

The data are visualized in a diagram (Figure 1), which illustrates the distribution of low, medium, and high levels of interiorization across each of the three components. The diagram reveals a clear imbalance: while the level of cognitive awareness is relatively high, affective engagement is less pronounced, and behavioral realization is minimal. This indicates the existence of barriers to the transition from knowledge to acceptance and action, which

require further analysis. Such an imbalance is also characteristic of international cases of cultural modernization, where visual and cognitive representation of values tends to outpace their consolidation in practice (Chen, 2021; Hoskins & Skey, 2022).
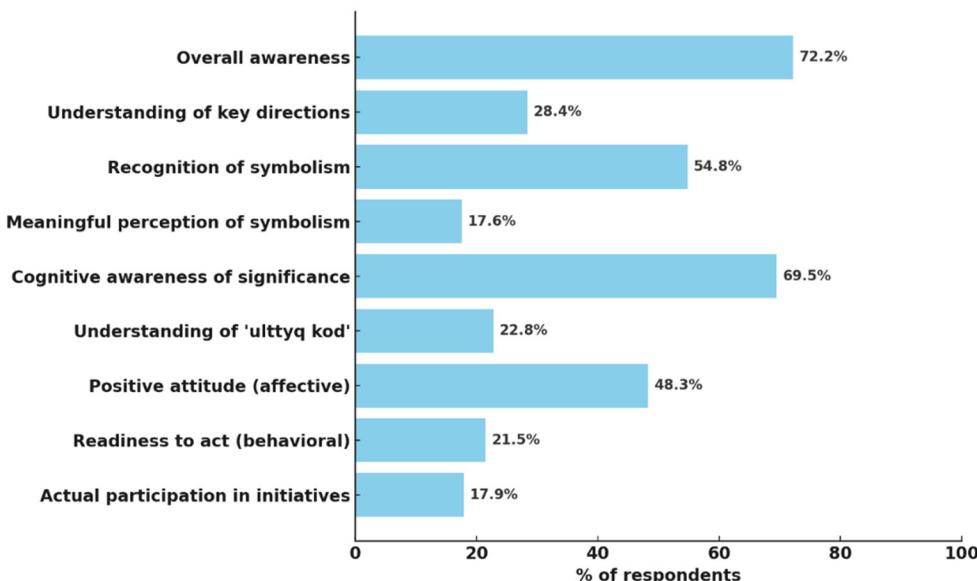
Figure 1: Level of Interiorization of the Values of the Rukhani Zhangyru Program by Cognitive, Affective, and Behavioral Components (as a percentage of the total number of respondents, n = 198)

Thus, the data confirm the hypothesis regarding the insufficient depth of interiorization of state-promoted values, despite their nominally high degree of representation in the public sphere. The imbalance between the levels of interiorization indicates the need for comprehensive psychological–pedagogical and institutional support aimed at transforming the Rukhani Zhangyru program from an ideological project into a sustainable value reference point for everyday culture and behavior. The findings provide a basis for developing targeted engagement strategies that take into account cognitive, emotional, and behavioral barriers across different social groups.

Discussion. The results of the present study reveal a comprehensive picture of the state of interiorization of the values transmitted within the framework of the Rukhani Zhangyru program in the public consciousness of various social groups. The most significant finding requiring analytical emphasis is the gap between the level of awareness of the program and the depth of personal acceptance and behavioral adherence to its proclaimed principles. This gap confirms a key thesis of contemporary pedagogical axiology: the interiorization of values is not a mechanical process and cannot be achieved solely through informational saturation, frequency of references, and the administrative normalization of meanings. On the contrary, it is an intrinsically motivated, culturally mediated, and dialogically supported process of meaning-making, grounded in personal experience, cognitive engagement, and emotional involvement.

At the cognitive level, it was found that knowledge about the Rukhani Zhangyru program is fragmented – respondents believe they are familiar with its key value propositions, yet their knowledge is often limited to superficial clichés and slogans, without evolving into a stable personal structure. The observed knowledge–action gap reflects a lack of transitional conditions. In terms of Self-Determination Theory, autonomy-supportive dialogue, competence-building projects, and relatedness through mentorship are required to convert awareness into practice. Comparable tendencies are observed internationally. In China (Chen, 2021) and in the UK (Hoskins & Skey, 2022), modernization programs also

achieved wide symbolic recognition but limited behavioral enactment. This demonstrates that dialogic and activity-based mediation is not unique to Kazakhstan but a general condition of successful value interiorization. Without these supports, values remain declarative and do not translate into consistent behavior. This aligns with the findings of Duncan et al. (2021), which demonstrated that knowledge devoid of personal significance and emotional engagement does not transform into a stable value orientation. A similar mechanism is described in the Cognitive–Affective Model of Immersive Learning (CAMIL) proposed by Makransky and Petersen (2021), which emphasizes that cognitive acquisition without emotional immersion does not lead to the deep assimilation of value structures. Thus, the absence of cognitive integration of the program's value components among part of the respondents indicates a low level of engagement and hinders the transition to its affective and behavioral interiorization.

At the emotional level, the situation appears more polarized: nearly half of the respondents express a positive attitude toward aspects of the program connected with local identity, cultural memory, native places, and traditions. These findings are consistent with the results of Wang et al. (2024), who emphasize that emotional engagement with local cultural contexts fosters deeper acceptance of values than do abstract symbols. Furthermore, the work of Medeuova (2024) demonstrates a strong link between collectively shared historical narratives and the formation of personal significance, supporting the hypothesis that concrete cultural constructs predominate in the process of interiorization.

However, the persistent alienation from values lacking a clear emotional component (e.g., "pragmatism", "global competitiveness") underscores the limitations of normative, rationalist models of education that do not rely on emotional and personal involvement. This finding confirms the necessity of revising the methods of presenting and embedding values in educational and public contexts – from formal, transmissive approaches to subject-oriented and contextually motivated ones.

At the behavioral level, value interiorization indeed shows the lowest degree of manifestation. This aligns with the contemporary longitudinal study by Williams and Ciarrochi (2020), which demonstrated that sustained value-based behavior requires reliable social reinforcement, including encouragement, recognition, and motivational support. Without such reinforcement, even cognitively assimilated values fail to translate into behavioral patterns (Williams & Ciarrochi, 2020). This perspective is further supported by Self-Determination Theory (SDT) developed by Deci and Ryan, which highlights that maintaining value-driven behavior necessitates the satisfaction of three basic psychological needs: autonomy, competence, and relatedness (Ryan & Deci, 2020). This explains why the gap between declarative knowledge and actual behavior points to insufficient institutional and social support for the interiorization process.

Identifying the dependence of the level of interiorization on socio-demographic and institutional factors is of fundamental importance. Higher levels of value engagement are observed among individuals involved in educational, cultural, and project-based outreach activities – those who interact with the program not as an abstract political construct but as a concrete tool for personal and professional growth. This finding supports the core principle of the activity-based approach, which holds that the assimilation and interiorization of norms and meanings occur not through passive reception, but through activity in which the subject occupies an active, meaning-generating position.

Particular attention should be paid to the documented disproportion between the wide dissemination of the program's visual and symbolic representations and their weak semiotic interiorization. Despite the high recognizability of logos, images, and graphic elements, in most cases they do not acquire semantic depth in the perception of respondents. This indicates a disruption in the symbolic function of visual materials when they lack cultural encoding and meaningful interpretation.

Contemporary research confirms that visual representations become effective only

when they establish a strong connection with the cultural and personal experience of the audience. For example, Patel et al. (2023) demonstrated that meaningful visual symbols create a trustworthy cultural context and facilitate the emotional interiorization of values, particularly when integrated into local cultural practices. Similarly, Xiong et al. (2022), in their study on the influence of visual factors on emotional regulation, found that specific scenes with a defined emotional mapping significantly enhance positive emotional responses, underscoring the importance of substantive alignment between a visual image and the experienced cultural context. In the absence of such a deep semiotic link, visual elements remain decorative, failing to become carriers of enduring cultural meanings and exerting little influence on value perception.

Finally, the identified barriers to interiorization make it possible to clearly delineate the institutional and communicative mechanisms that hinder the formation of a stable value consciousness. Importantly, the study does not evaluate the effectiveness of the state program itself; instead, it analyzes its educational mediation and the psychological–pedagogical conditions under which interiorization occurs. The most frequently mentioned factors included formalism in the implementation of the program, the absence of dialogue and individual targeting, lack of clarity in formulations, as well as duplication of substantive elements with other state initiatives. All of these barriers confirm the necessity of moving from an administrative model of education – based on transmission and control – to a model of cultural–media mediation, in which values become part of a dialogue rather than a monologue.

Thus, the results of this study confirm the hypothesis that value interiorization is possible only if a holistic system of psychological–pedagogical support is established. This system should include dialogic forms of communication; emotional engagement; activity-based realization of values in social and educational practices; and contextual adaptation of content to the specificities of target groups. The absence of these conditions leads to a superficial, declarative assimilation of meanings and creates a situation of "symbolic inaudibility", in which values are transmitted but neither lived nor genuinely accepted.

Based on these findings, it becomes evident that there is a need to rethink educational strategies within the framework of cultural policy – a need that is further reflected in the theoretical–conceptual interpretation of the obtained data. The patterns of value interiorization identified in this study, in relation to the state program Rukhani Zhangyru, possess both empirical and theoretical–conceptual significance. They provide a fresh perspective on the problem of education under conditions of cultural modernization and the growing symbolic fragmentation of contemporary Kazakhstani society. Particularly important is the confirmation that the transmission-based approach to shaping value orientations is limited, and that there is a pressing need to shift toward subject-oriented models of pedagogical interaction – models in which values are not imposed externally, but are interiorized through participation, empathy, and activity-based identification.

From a scholarly perspective, this study enriches the concept of value consciousness of the individual in the context of post-Soviet pedagogy. Our conceptual contribution lies in proposing a condition-based bridge model: interiorization breaks down when semiotic recognition is not mediated by dialogue, mentorship, and activity. This integration of visual–semiotic framing with activity-based pedagogy provides a novel explanatory lens for the Kazakhstani modernization context. While the phenomenon of value interiorization has previously been examined by domestic scholars such as Kon(1989), Riabtsev et.al (2022) as well as in the works of the contemporary school – Talgarova (2022), Zhusupova A.M. (2023), and Kasymova (2021) – the primary focus has remained on traditional age-related stages of education. However, the issues of shaping value consciousness under conditions of profound sociocultural transformations and symbolic competition have received insufficient attention. In this context, it is crucial to expand

the theoretical framework by incorporating contemporary approaches developed in recent studies.

Of particular relevance is the comparison of the present findings with the principles of cultural–semiotic theory of education, which posits that modern upbringing increasingly relies on multimodal and symbolically saturated formats for content delivery. From this perspective, the works of Bezemer and Kress (2016) demonstrate that educational communication is built upon the interaction of various semiotic resources – visual, verbal, auditory, and spatial. The authors emphasize that meaning arises not from individual elements, but from their interrelation within a coherent system; therefore, visual components lacking interpretative support lose their educational potential and become decorative elements.

The practical significance of the study consists in formulating specific psychological–pedagogical conditions that may be directly implemented in educational settings. These include:

– the introduction of dialogic and interactive seminar formats that foster reflection and personal involvement;

– the use of mentorship and role-modeling to support value assimilation among young people;

– the contextualization of values through culturally relevant narratives such as Tugan zher;

– the development of project- and activity-based formats that connect values with social practice.

The application of these approaches can increase the depth and sustainability of value interiorization in the learning process and beyond. The data obtained indicate that the key conditions are: the presence of emotional engagement; contextual relevance of the transmitted content; opportunities for dialogic interaction; participation in practice-oriented and project-based activities; and the availability of pedagogical guidance. These results can be directly applied to the design of educational programs, training courses, and outreach initiatives aimed at fostering civic, cultural, and value-based identity.

Particularly noteworthy is the observation that value interiorization is deeper among respondents who perceive Rukhani Zhangyru not as a state ideological construct, but as a tool for personal growth and meaningful civic participation. This fact confirms the hypothesis of the necessity for the personalization of educational influence – that is, the recognition of the uniqueness of the subject, including their motivations, cultural reference points, and level of understanding. This approach finds theoretical grounding, for example, in the concept of transformative learning, which emphasizes critical reflection, internal transformation, and learner experience as the foundation of the educational process (McClain, 2024).

The analysis of the obtained data broadens the understanding of the educational environment – it can now be viewed not only as an institutionally predetermined context, but also as a psychologically experienced reality, lived through by the individual and shaping their meanings and actions. In traditional pedagogical theory, the environment is often presented as an external category – a set of conditions and factors. However, contemporary research in the framework of cultural–historical theory of education (Hite, 2025) emphasizes that the environment must be perceived and interpreted by the individual as part of their personal history. Accordingly, in the context of Rukhani Zhangyru, it is essential to shift from formally preplanned formats of education to dynamic, flexible, and subject-rich practices, in which the participant becomes an active co-author in the value formation process.

An additional area of significance in this study lies in revealing the role of teachers, curators, and mentors as mediators between state ideology and the inner world of the individual. The results showed that the presence of pedagogical guidance significantly influences the depth of interiorization, especially among the 18–25 age group. This finding confirms the central role of the educator as a cultural mediator who cultivates in learners the ability to reflect, correlate their own value orientations with external demands, and comprehend value content. In this context, it becomes necessary to

re-evaluate the functions of the educator – not only as a transmitter of information, but as a facilitator who integrates the individual into the space of value-based dialogue.

In the context of increasing diversity of cultural codes and global information competition, it is particularly important to stress that effective interiorization cannot be achieved through the imposition of values. On the contrary, it requires the creation of a meaningful infrastructure in which values are not imposed but offered as possible foundations for choice, interpretation, and self-determination. This is what makes the pedagogical task both the most challenging and the most deeply humanistic and scientifically grounded. The study demonstrates that moving away from directive methods toward engagement, dialogue, and interpretation increases not only the level of value acceptance but also its sustainability in both behavioral and motivational terms.

Thus, the results obtained through empirical analysis confirm that value-based education within the framework of a state program can be effective only if it meets certain psychological–pedagogical criteria. These include subjective relevance, emotional proximity, cultural coherence, opportunities for personal choice, and participation in meaningful forms of joint activity. These criteria set the direction for transforming educational practices in Kazakhstan and for developing new educational models in which values become not an external norm but an internal guide for self-development and social responsibility.

The identified patterns make it possible not only to define the current conditions for the successful interiorization of values, but also to establish guidelines for the further development of educational policy within the framework of cultural modernization. Despite its significant empirical and conceptual foundation, the present study has several limitations related both to methodological parameters and to the specific characteristics of the object of study. Identifying and critically reflecting on these limitations is a necessary condition of scholarly integrity and an important step in formulating directions for future research.

First and foremost, a key limitation of the study lies in the targeted composition of the sample, which predominantly includes young people and professional groups associated with education, culture, or the humanities. Therefore, the findings cannot be generalized to Kazakhstan's population at large. Future studies should expand to technical and manual professions, rural populations, and ethnic/ linguistic groups in order to test the robustness of the identified conditions.

Another limitation concerns the potential cognitive bias of respondents toward socially desirable answers. Since the Rukhani Zhangyru program carries a state-driven and normative character, there is a possibility that some responses – particularly within the questionnaire component – were shaped by conformity and a desire to demonstrate loyalty. This is especially important to consider when interpreting positive evaluations and analyzing the affective component of interiorization. Although the inclusion of qualitative methods (interviews, open-ended questions) was intended to mitigate this effect, completely eliminating the influence of social desirability in studies of this type remains challenging.

An additional limitation relates to the temporal scope of the study, which captures a snapshot of perceptions during the late stage of the Rukhani Zhangyru program's implementation. This imposes certain constraints on dynamic analysis and does not allow for a full examination of the evolution of value perceptions over time. Since its launch in 2017, the program – being a long-term and multi-stage initiative – has undergone several substantive and organizational trans-formations. However, the present study did not aim to reconstruct the trajectory of these changes or assess their impact on the level of interiorization. This area calls for a separate historical–pedagogical investigation employing longitudinal methods and discursive comparisons.

It should also be noted that the research is focused predominantly on the phenomenon of interiorization within educational and cultural environments. While justified in light of the stated objectives, this focus simultaneously

limits the ability to consider the broader socio-political context. The psychological–pedagogical perspective allows for an in-depth analysis of the motivational and behavioral aspects of value assimilation but excludes a wider spectrum of influences – for example, institutional contradictions, ideological conflicts, the transformation of public meanings, and the symbolic struggle over the interpretation of cultural codes. These aspects could be the subject of related sociological and cultural studies grounded in the concepts of ideological hegemony, critical theory, and postcolonial pedagogy.

Finally, the study's analysis of ethnocultural differences is limited, despite the fact that the Rukhani Zhangyru program was originally conceived to shape national identity on the basis of ethnic, historical, and cultural multilayeredness. Within the present study, no targeted comparison of ethnic, linguistic, or regional differences was conducted. The sample was stratified by age, education, and professional affiliation, but not by ethnicity. This significantly narrows the potential for analyzing interethnic differences in the perception and acceptance of the values promoted by the program – a particularly relevant issue given the multinational composition of Kazakhstani society. Therefore, the analysis of ethnocultural contexts of interiorization represents a promising direction for future research.

One of the most promising areas for further research is an in-depth analysis of the visual and semiotic dimensions of the program, encompassing not only the quantitative measurement of symbol recognition but also the qualitative study of the mechanisms by which such symbols are perceived, processed, and transformed in the individual's subjective experience. As this study has shown, visual imagery occupies a central place in the program's presentation; however, it is often perceived as an external and stylistic element lacking substantive conceptual elaboration. To gain a deeper understanding of the role of visual culture in value-based education, it is advisable to employ methods from visual pedagogy, narrative analysis, and the theory of cultural representations.

The methodological dimension of the study could also be further developed. In particular, there is a strong case for using longitudinal and experimental designs to trace the dynamics of value interiorization in educational environments. At present, Kazakhstan lacks large-scale research tracking changes in value orientations among school and university students during their participation in civic and patriotic education programs. Conducting such studies would make it possible not only to assess the stability of values but also to identify the factors that either facilitate or hinder their consolidation in the long term.

Another relevant direction involves the integration of digital and media platforms as an environment for interiorization – an especially important consideration given the growing role of digital socialization and media consumption among youth. Reconceptualizing Rukhani Zhangyru through a digital lens – not only as an educational but also as a media–cultural initiative – opens new horizons for pedagogical work with values. In this context, it would be valuable to examine the effectiveness of digital visual narratives, video content, storytelling, and interactive formats as mechanisms for value transmission.

Accordingly, future research prospects can be structured along several logical lines:

1. Deepening intercultural and interethnic analysis of the program's perception;

2. Developing experimental models of educational influence;

3. Creating pedagogically oriented visual–value content;

4. Studying digital forms of value interiorization;

5. Comparing the programmatic transmission of values in Rukhani Zhangyru with similar practices in other countries.

These directions shape a theoretical–applied field within which it is possible to advance both fundamental research in pedagogical axiology and the design of new educational models oriented toward cultural sensitivity, dialogic engagement, and active subject participation.

Conclusion. The results of this study allow us to assert that the problem of interiorizing the

values of the state program Rukhani Zhangyru extends beyond the political–administrative sphere and requires examination within the coordinates of pedagogy and psychology, as processes of deep formation of the individual's semantic and motivational structure. Based on survey data (n = 198) and interviews (n = 21), formal knowledge of the program's content does not automatically translate into acceptance or enactment: 72.2% of respondents reported awareness, yet only 28.4% reproduced key guidelines and just 17.9% had actual participation experience. This confirms the necessity of psychological–pedagogical support. Interiorization is a complex, multi-stage, contextually and personally mediated process, in which cognitive comprehension, emotional engagement, individual identification, and socio-pedagogical support play an essential role. The study showed that, at the cognitive level, most respondents are aware of the program's existence but exhibit fragmentation and superficiality in understanding its key concepts. At the affective level, a marked polarization was observed: values associated with cultural memory and local identity elicit a positive emotional response, whereas universalist and strategic principles (pragmatism, openness to the world) are perceived in an abstract or formal manner. The behavioral level of value assimilation remains the least pronounced, confirming the need for systemic pedagogical support and for consolidating value models through practice-based activities.

The barriers to interiorization identified in the study – formalism, lack of dialogue, vagueness of formulations, and symbolic overload without interpretation – point to a misalignment between the administrative model of value transmission and the requirements of subjective perception. For values to be interiorized, they must not only be heard but also understood, experienced, and interpreted in the context of personal experience. This necessitates a fundamental rethinking of approaches to educational and outreach work within the framework of national programs. The scientific significance of the study lies in clarifying the psychological–pedagogical conditions for value interiorization in a modernizing society. In particular, the research substantiates the need to move from a transmission–receptive model to a model of cultural mediation, in which the subject becomes not a passive consumer but an active co-author of value meanings. The practical significance lies in the applicability of the results to the development of educational programs, pedagogical technologies, educational strategies, and project initiatives aimed at deepening the value consciousness of both youth and adults.

In summary, it can be argued that the effective interiorization of values within the context of the Rukhani Zhangyru program is possible under the following conditions:

– ensuring substantive rather than declarative enrichment of educational forms;

– developing dialogic, interactive, and activity-based forms of engagement;

– maintaining cultural sensitivity, contextual relevance, and personalized pedagogical support;

– integrating value content into the real social experience of learners.

Future research should focus on clarifying the mechanisms of sustainable value consolidation under conditions of digital socialization, intercultural communication, and the institutional fragmentation of the educational environment. Furthermore, it is advisable to expand the empirical base by including broader social groups, ethnocultural strata, and age categories. Expanding the interdisciplinary scope of research – by incorporating cultural studies, sociology, and media pedagogy – will make it possible to refine our understanding of the perception of state ideology in an increasingly globalized and multicultural society. Thus, the interiorization of the values of Rukhani Zhangyru is not a one-time act of transmitting ideological constructs, but a multidimensional process encompassing the structure of consciousness, the emotional sphere, and the behavioral practices of the individual. Only under comprehensive psychological–pedagogical conditions can this process lead to sustainable outcomes that contribute to the formation of civic identity,

sociocultural maturity, and responsibility. These interpretations remain limited to the pedagogical dimension of value mediation and should not be conflated with assessments of policy efficiency.

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Innovative Supervisory Practices in Social Sciences Doctoral Education

Abstract

Introduction. Supervision is central to doctoral education, particularly in the social sciences where students must develop not only methodological competence but also a strong researcher identity. This study investigates how innovative supervisory practices contribute to doctoral students' academic development and professional socialization within an internationalized higher education environment. *Methodology and Methods*. Using a qualitative design, the research draws on interviews with doctoral students and institutional documents to explore the ways in which supervision operates as both a pedagogical and relational practice. *Results*. The findings show that beyond traditional academic guidance, supervisors fostered learning and identity formation through collaborative authorship, group-based supervision, reflexive mentoring, and adaptive approaches responsive to individual trajectories. These innovations reduced isolation, strengthened confidence, and facilitated integration into scholarly communities. The study concludes that innovative supervision enhances resilience and independence while preparing doctoral students to participate more fully in global academic life. *Scientific Novelty*. The study reconceptualizes supervision as a pedagogical and innovative practice in a non-Western context that shapes researcher identity in doctoral education. *Practical Significance*. It shows how innovative supervisory practices in a non-Western context foster researcher identity and offer universities strategies to make doctoral education more student-centered, inclusive, and internationally relevant.

Keywords: doctoral supervision, innovative mentoring, researcher identity, social sciences, doctoral socialization, higher education.

Introduction. Doctoral education is widely recognized as the highest level of academic training, preparing graduates not only to conduct independent research but also to contribute to knowledge creation, institutional development, and broader societal progress. In addition to mastering research methodologies, doctoral students undergo a process of professional socialization that shapes them into members of the academic community. This socialization involves learning the norms, values, and practices of scholarship while developing an identity as an independent researcher (McAlpine & Amundsen, 2018; Sverdlik et al., 2018). In the social sciences, where reflexivity, critical engagement, and theoretical contributions are fundamental, this process takes on a particular complexity. Students must learn to position themselves within contested epistemologies, balance methodological rigor with interpretive depth, and articulate their scholarly voices.

At the center of this process lies doctoral supervision. Supervisors are often described as the most significant influence on doctoral students' progress, shaping their academic development, professional opportunities, and even psychological well-being (Lee, 2008; Wisker, 2021). Traditionally, supervision has been conceptualized as academic oversight, focused on monitoring research design and evaluating dissertation progress. However, recent scholarship emphasizes that supervision extends far beyond technical guidance. It also encompasses mentoring, modeling academic values, fostering resilience, and facilitating integration into scholarly communities.

Effective supervisors serve as role models, collaborators, and gatekeepers, introducing students to networks of knowledge production and professional practice.

The past two decades have seen growing interest in innovative forms of supervision that challenge hierarchical, individualized models. Collaborative authorship has emerged as a powerful practice, giving students early exposure to academic publishing and accelerating their integration into research communities (Pyhältö et al., 2019). Group supervision, increasingly adopted in universities worldwide, reduces student isolation, fosters peer learning, and creates collective spaces of reflexivity (Guerin et al., 2015; Samara, 2021). Reflexive mentoring has been emphasized in the social sciences, where identity formation is central to the research process; supervisors are encouraged to support students' self-awareness and critical reflection (Manathunga, 2019). Adaptive supervision, meanwhile, tailors approaches to students' prior experience, linguistic backgrounds, and professional aspirations, reflecting the diversity of doctoral cohorts in contemporary higher education (Barnes & Austin, 2021; Cotterall, 2021).

Despite this growing body of literature, most research has been conducted in established Western systems, particularly in Europe, Australia, and North America. Less is known about how innovative supervisory practices are enacted in hybrid, non-Western research environments. International research universities in such settings provide a particularly valuable lens: they adopt global academic standards - such as English-medium instruction, international publishing requirements, and peer-reviewed assessments - while operating within local cultural, institutional, and political contexts. These universities function at the intersection of global and local practices, creating both opportunities and tensions in doctoral education. They also serve as important laboratories for examining how supervision adapts to new conditions and how innovations are introduced to support doctoral students in diverse environments.

This article investigates supervision in the social sciences at an international research university in a non-Western context. It pays particular attention to the ways in which supervision is enacted as a site of innovation that supports both academic success and the development of researcher identity. By focusing on supervisory practices, the study addresses a critical dimension of doctoral education that directly affects completion rates, student well-being, and the production of high-quality research. More broadly, it responds to international debates on how doctoral education can be reimagined to be more student-centered, inclusive, and responsive to the challenges of global higher education.

The analysis draws on two influential frameworks. The first is Weidman et al.'s (2001) theory of graduate student socialization, which conceptualizes doctoral education as a staged process unfolding across anticipatory, formal, informal, and personal dimensions. The second is Akerlind's (2008) model of researcher identity development, which emphasizes the gradual achievement of independence, confidence, and recognition as central to becoming an academic researcher. By applying these frameworks in a new and underexplored context, the study extends theoretical understandings of how socialization occurs under hybrid conditions. It also demonstrates how supervision - particularly in its innovative forms - serves as a mechanism that bridges global standards with local realities.

In doing so, the article makes two contributions. First, it provides empirical evidence from an internationalized but non-Western higher education environment, thereby filling an important gap in the literature. Second, it highlights how innovative supervisory practices - such as collaborative authorship, group supervision, reflexive mentoring, and adaptive guidance - function as catalysts for researcher identity formation and long-term academic development. These findings hold significance not only for social sciences doctoral programs but also for universities worldwide that are seeking to internationalize and improve the quality of doctoral education.

Materials and Methods. This study employed a qualitative case study design to explore the role of supervision in doctoral

education in the social sciences at an international research university operating within a hybrid higher education system. Case study methodology was chosen because it allows for an in-depth examination of complex socialization processes within their natural settings, while also enabling the researcher to capture the interplay between institutional structures and individual experiences (Creswell & Poth, 2018; Merriam & Tisdell, 2016; Priya, 2021). A case study approach was particularly appropriate in this context, as the research sought to understand how supervision is practiced and perceived in an institution that blends Western-oriented academic standards with local cultural traditions.

The institutional context is characterized by several distinctive features. It follows an English-medium curriculum and applies international benchmarks for doctoral training, such as publication requirements, peer-reviewed assessments, and structured progression milestones. At the same time, it recruits a diverse student body, including individuals with professional careers, varied disciplinary backgrounds, and multiple linguistic repertoires. This combination created a rich setting in which supervisory practices had to be both academically rigorous and responsive to diverse student trajectories.

The study drew on semi-structured interviews with eleven doctoral students enrolled in social sciences programs. Participants represented different cohorts and stages of study, ranging from first-year students who were still navigating supervisory relationships to advanced candidates preparing for dissertation completion. This variety ensured that perspectives reflected the full span of the doctoral journey. Students also varied in demographic background: some entered the program directly after master's study, while others came with significant professional experience; some were early-career academics, while others were mid-career professionals seeking academic advancement. Gender balance was also maintained, reflecting the diversity of the student population.

Semi-structured interviews were selected as the primary method of data collection because they provide both structure and flexibility. The interview protocol included open-ended questions about students' supervisory experiences, the nature of feedback received, the extent of academic and emotional support, opportunities for collaboration, and reflections on identity development. Follow-up questions were used to probe specific experiences and clarify meanings. Each interview lasted between 60 and 90 minutes and was conducted either in person or via secure online platforms, depending on participants' availability. All interviews were recorded with consent and transcribed verbatim. To protect confidentiality, pseudonyms were used in transcripts and reporting. Ethical approval was obtained from the institutional review committee, and participants were informed of their rights, including voluntary participation and the option to withdraw at any time.

In addition to interviews, institutional documents were analyzed, including doctoral handbooks, supervision guidelines, and policy statements. Document analysis provided insight into the formal expectations placed on supervisors and students, and offered a way to compare institutional rhetoric with student experiences (Bowen, 2009). This triangulation of data sources strengthened the validity of the study by allowing convergence of evidence across interviews and texts.

Data were analyzed using reflexive thematic analysis (Braun & Clarke, 2021; Braun et al., 2022). Initial codes were generated inductively and grouped into categories representing academic guidance, mentoring, networking, and innovative supervisory practices. Themes were refined iteratively and validated against existing supervision literature (McAlpine & Amundsen, 2018; Pyhältö et al., 2021). To ensure credibility, researcher reflexivity was maintained throughout the study (Berger, 2015), and coding decisions were revisited collaboratively. This methodological approach aligns with international scholarship emphasizing that supervision should be studied as both a structural and relational practice in doctoral education (Gardner & Doore, 2020; Skakni et al., 2025).

Results. The findings reveal that supervisors play a central role in shaping doctoral education in the social sciences. Their influence extended well beyond traditional academic oversight, encompassing mentorship, professional networking, and the introduction of innovative supervisory practices that directly contributed to doctoral students' identity development as emerging researchers. Four interrelated themes emerged: supervisors as academic guides, mentors, networkers, and innovators.

Supervisors as Academic Guides. Supervisors were first and foremost described as academic guides who supported the intellectual and methodological rigor of students' projects. They provided assistance in refining research design, selecting appropriate theoretical frameworks, and making methodological decisions suited to complex social science research. Participants consistently emphasized the importance of timely, detailed, and constructive feedback, which not only enhanced the quality of dissertation chapters but also boosted students' confidence as scholars.

For many students, this guidance represented the bridge between theoretical understanding and practical execution of research. Supervisors were valued for their ability to challenge assumptions, push students to deepen arguments, and ensure alignment with disciplinary conventions. Importantly, the role of academic guide was not static. Over time, supervisors adjusted their expectations, gradually reducing direct oversight as students gained competence. This shift allowed students to transition from dependent apprentices to independent researchers, confirming the supervisory process as a scaffolded journey toward autonomy.

Supervisors as Mentors. Supervisors were also consistently described as mentors, whose roles extended into the emotional and psychological domains of doctoral education. Participants explained that supervisors' encouragement was critical during moments of self-doubt, such as during the challenges of data collection, analysis, or dissertation writing. Mentorship often included motivational conversations, reminders of long-term goals, and consistent modeling of academic integrity and resilience.

The dual role of supervisors - as both intellectual challengers and empathetic supporters - proved particularly valuable in sustaining doctoral students' motivation. Supervisors who balanced high academic standards with empathy helped students navigate the inevitable pressures of doctoral study. Mentoring was therefore seen not as a secondary aspect of supervision, but as an essential complement to academic guidance. This echoes existing international studies that highlight supervision as both a cognitive and emotional practice (Bastalich, 2017; Wisker, 2021, 2023).

A notable finding was that mentoring practices varied depending on students' backgrounds. Early-career students often needed reassurance and confidence-building, whereas mid-career professionals valued supervisors' ability to help them integrate professional expertise into academic research. Supervisors' sensitivity to these differences further underscored the multifaceted and adaptive nature of mentoring in doctoral education.

Supervisors as Networkers. Another critical dimension of supervision involved supervisors' active role in professional networking. Supervisors encouraged students to attend and present at international conferences, often providing guidance in proposal development and presentation strategies. They introduced students to colleagues abroad, recommended them for collaborative projects, and provided opportunities to co-teach or co-research. These practices significantly expanded students' professional visibility and strengthened their sense of belonging within the global academic community.

For students situated in a hybrid higher education environment, where access to international academic circles may otherwise be limited, supervisors' facilitation of networking opportunities was particularly impactful. Students described conference presentations and international collaborations as transformative experiences that shifted their identities from local students to globally engaged scholars. This confirmed earlier findings in the literature that supervision plays a decisive role in students' academic integration and future career trajectories (Pyhältö et al., 2019).

Networking practices also helped students acquire essential skills for academic careers, such as collaboration, interdisciplinary communication, and dissemination of research findings to diverse audiences. In this way, supervisors' role as networkers extended supervision beyond the immediate dissertation project to long-term career development.

Supervisors as Innovators. The most striking finding was the extent to which supervision was characterized by innovative practices that moved beyond traditional models of one-to-one academic oversight. Four specific practices were identified: collaborative authorship, group supervision, reflexive mentoring, and adaptive supervision.

Collaborative Authorship. Many supervisors engaged in co-writing scholarly articles with their doctoral students. This practice was described as one of the most impactful innovations, as it provided direct exposure to the norms of academic publishing and allowed students to gain confidence in disseminating their work. Collaborative authorship not only accelerated integration into scholarly communities but also signaled recognition of students as legitimate contributors to the field. Students emphasized that writing alongside supervisors helped them internalize standards of argumentation, structure, and clarity that are difficult to achieve through feedback alone.

Group Supervision. Another innovation involved the use of group supervision formats, where supervisors convened multiple students for joint meetings. These sessions created peer-learning environments in which students could share progress, exchange constructive feedback, and reflect collectively on challenges. Group supervision helped normalize struggles such as writer's block or methodological difficulties, reducing the isolation often associated with doctoral study. It also encouraged interdisciplinary exchange, as students from different social science fields compared approaches and insights. This practice resonated strongly with international findings on the benefits of peer learning and collective reflexivity in doctoral education (Samara, 2021; Guerin et al., 2015).

Reflexive Mentoring. Supervisors also encouraged students to critically examine their researcher identities, positioning supervision as a reflective as well as technical process. Reflexive mentoring involved guiding students to articulate their motivations, values, and scholarly aspirations. This reflective element helped students connect their personal experiences with their academic projects, reinforcing their identity as independent scholars. It also equipped them with resilience, as they were better able to navigate setbacks by framing challenges as part of their professional growth.

Adaptive Supervision. Finally, supervisors demonstrated adaptability by tailoring their approaches to students' individual needs. Students from non-English speaking backgrounds received structured guidance on academic writing, while those with prior research or publication experience were given greater autonomy. Similarly, supervisors adjusted their practices for students balancing doctoral study with professional responsibilities, offering flexible deadlines or personalized forms of feedback. Adaptive supervision reflected a student-centered paradigm that valued inclusivity and recognized diversity in doctoral cohorts (Barnes & Austin, 2021; Cotterall, 2021).

Taken together, these findings demonstrate that supervision in the social sciences was experienced as a complex and multifaceted process that combined intellectual, relational, and professional dimensions. Supervisors were not only academic guides but also mentors, networkers, and innovators. The emergence of innovative practices - particularly collaborative authorship, group supervision, reflexive mentoring, and adaptive supervision - marked supervision as a dynamic and transformative force in doctoral education. These innovations facilitated dissertation completion, reduced isolation, enhanced academic confidence, and strengthened students' researcher identities, thereby preparing them for long-term participation in the global academic community.

Discussion. The findings underscore that supervision in the social sciences is not a static or uniform process but a multidimensional practice that integrates intellectual, relational,

and professional dimensions. While supervisors have traditionally been viewed primarily as academic guides who ensure the quality and rigor of doctoral work, this study demonstrates that their role is increasingly characterized by innovative practices that enhance doctoral students' socialization and researcher identity development. These findings provide fresh insights into how doctoral education operates in hybrid higher education contexts, where global academic norms intersect with local cultural and institutional realities.

In terms of innovations in supervisory practice, *collaborative authorship* exemplifies the shift from hierarchical supervision to partnership. In this study, joint publication with supervisors provided students with early entry into academic publishing, helping them to internalize scholarly conventions while simultaneously gaining recognition as legitimate contributors to their fields. This practice challenges traditional apprenticeship models where students were expected to publish independently only after completing their dissertations. It resonates with international research emphasizing the importance of early integration into scholarly communities of practice (Pyhältö et al., 2019). In many Western contexts, such as in Europe and North America, co-authorship is now widely recognized as a critical mechanism for supporting doctoral completion and employability. The findings here confirm that this practice is equally valuable in hybrid contexts, where students must navigate both local expectations and international publishing standards.

Group supervision represents another important innovation. Beyond efficiency gains, group supervision created collective spaces of learning that countered the isolation frequently reported by doctoral students (Sverdlik et al., 2018). The findings show that such arrangements enabled peer-to-peer feedback, collaborative problem-solving, and the normalization of challenges such as writer's block or methodological dilemmas. These practices align with global trends toward peer learning and co-construction of knowledge (Samara, 2021; Guerin et al., 2015). Importantly, in the

hybrid setting examined here, group supervision also served as a culturally inclusive practice. Students from diverse backgrounds described these sessions as valuable opportunities to share experiences and perspectives, thereby reducing asymmetries often present in cross-cultural supervision. This suggests that group supervision is not only a pedagogical innovation but also an equity-enhancing mechanism in international doctoral programs.

Reflexive mentoring highlights the importance of supervision in fostering critical self-awareness and researcher identity formation. In social sciences research, reflexivity is not only a methodological stance but also a core component of scholarly identity. By encouraging students to interrogate their values, positionalities, and motivations, supervisors enabled them to align personal aspirations with academic goals. The findings show that this reflexive dimension strengthened resilience, nurtured authenticity in scholarly practice, and fostered long-term engagement with academia. These outcomes echo calls for doctoral education that foregrounds identity work alongside technical skill development (Manathunga, 2019; Xu & Hjalmarson, 2022). Internationally, reflexive mentoring has been found to help students navigate the emotional complexities of doctoral work, particularly in social sciences fields where personal experience often intersects with academic inquiry.

Adaptive supervision further illustrates the shift toward student-centered doctoral education. Supervisors in this study adjusted their practices according to students' prior experiences, linguistic repertoires, and professional goals. For instance, novice researchers or students from non-English-speaking backgrounds received more structured and detailed feedback, while experienced students were offered greater autonomy. Such flexibility reflects a growing recognition in the literature that doctoral cohorts are increasingly heterogeneous (Cotterall, 2021; Barnes & Austin, 2021). In hybrid international contexts, adaptive supervision is particularly significant, as it mediates between global academic expectations and local cultural and institutional realities. It ensures that

diverse students are supported equitably, while also upholding international benchmarks for doctoral training.

Theoretical Implications. Theoretically, these findings extend and refine existing models of doctoral socialization and researcher identity. Weidman et al.'s (2001) framework conceptualizes doctoral education as a staged process - anticipatory, formal, informal, and personal - leading to socialization into academic communities. The evidence from this study suggests that innovative supervision practices blur these stages. Collaborative authorship, for example, combines formal learning (academic writing for publication), informal mentoring (joint reflection on arguments), and personal development (confidence building). Similarly, group supervision integrates formal oversight with informal peer learning and social support. These findings indicate that in hybrid contexts, socialization is less linear and more overlapping, shaped by relational innovations in supervision.

Akerlind's (2008) framework emphasizes progression toward independence, confidence, and recognition as key dimensions of researcher identity. The findings of this study challenge the assumption that independence is achieved primarily through gradual autonomy. Instead, they suggest that independence can be fostered through collaborative, innovative, and context-sensitive practices. Independence emerges not as separation from supervisors but as co-construction of identity through shared authorship, collective learning, and reflexive mentoring. This reconceptualization enriches theoretical understandings of doctoral supervision by highlighting the relational pathways through which identity is formed. Taken together, the findings suggest that doctoral supervision in hybrid contexts should be understood as a process of relational innovation, where traditional roles are reconfigured through practices that simultaneously support, challenge, and empower students.

Policy and Practical Implications. From a policy perspective, the study highlights several imperatives for universities seeking to strengthen doctoral education. First, institutions should formally recognize and incentivize innovative supervisory practices. Collaborative authorship, group supervision, and reflexive mentoring require significant investment of supervisors' time and effort. Without institutional acknowledgment - through workload models, recognition in performance evaluations, or supervisory awards - supervisors may lack incentives to adopt such approaches.

Second, supervisor training programs should move beyond a narrow focus on technical guidance to include relational and innovative dimensions. Training should equip supervisors with skills in group facilitation, cross-cultural communication, and reflexive mentoring. Evidence from international contexts suggests that such training enhances both student satisfaction and doctoral completion rates (Debray et al., 2024). Third, doctoral programs in hybrid contexts should adopt flexible policies that support adaptive supervision. This includes providing supervisors with resources to manage diverse student cohorts and ensuring that institutional structures - such as progression requirements or publication expectations - are responsive to the realities of students' varied backgrounds.

Finally, the findings highlight the importance of culturally sensitive supervision in internationalized universities. Supervisors who adopt reflexive and adaptive practices help reconcile tensions between global standards and local traditions, ensuring that doctoral education is both internationally competitive and locally meaningful.

Limitations. Despite its contributions, the study has several limitations. First, the data were drawn from a single international research university, which may limit the generalizability of the findings to other institutional or cultural contexts. While the hybrid environment provided a rich site for exploring innovative supervision, results may differ in national universities or in institutions with less international orientation. Second, the study relied primarily on students' perspectives. While these accounts are valuable, they capture only one side of the supervisory relationship. Supervisors' perspectives on their own practices, including the challenges and constraints they face, would provide a

more holistic understanding. Third, the study was cross-sectional, capturing supervisory experiences at a single point in time. Doctoral supervision and researcher identity, however, are dynamic processes that evolve across the doctoral journey. Longitudinal research would therefore be valuable for understanding how supervisory relationships and innovations develop over time.

Conclusion. This study highlights the central role of supervision in doctoral education in the social sciences, demonstrating that it is a multidimensional practice integrating intellectual guidance, mentoring, professional networking, and innovative approaches to student development. Supervision in this study was found to extend beyond conventional academic oversight, encompassing practices such as collaborative authorship, group-based learning, reflexive mentoring, and adaptive strategies tailored to the needs of diverse doctoral cohorts. These innovations significantly contributed to doctoral students' researcher identity formation, academic confidence, and readiness for engagement in international scholarly communities. The study also shows that independence and scholarly recognition can be nurtured not only through gradual autonomy but also through collaborative and context-sensitive supervisory practices. This reconceptualization positions supervision as a dynamic, relational, and culturally adaptive process that is especially relevant in hybrid, internationalized higher education settings.

At the practical level, the findings point to the importance of institutional support for innovative supervision. Universities seeking to strengthen and internationalize their doctoral programs should recognize supervision as a multifaceted activity requiring not only technical expertise but also relational skills, cultural sensitivity, and reflexive approaches. Policy measures that incentivize collaborative authorship, group supervision, and adaptive mentoring, while embedding structured supervisor development programs, can enhance student outcomes and strengthen institutional reputations in the global higher education landscape. Ultimately, this study underscores that doctoral supervision is both a form of academic training and a transformative process of identity construction. By embracing innovative, student-centered practices, supervisors can foster resilience, confidence, and a strong sense of belonging among doctoral candidates. As higher education systems worldwide continue to grapple with globalization and diversification, such practices will be essential for building sustainable, inclusive, and internationally relevant doctoral education.

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Socio-Pedagogical Prevention of Bullying in the School Environment: A Gender-Oriented Approach

Abstract

Introduction. The article examines the socio-pedagogical prevention of bullying among schoolchildren, with special consideration of gender-specific behavioral characteristics. Bullying is a widespread phenomenon that threatens children's safety, well-being, and academic achievement. Research shows that boys are more frequently involved in physical and direct bullying, while girls tend to use relational and indirect forms such as exclusion or rumor-spreading. In Kazakhstan, similar tendencies are observed, underscoring the need for gender-sensitive prevention programs. *Methodology and Methods.* The study is based on a literature review of both classical and contemporary scholarly works, including international and Kazakhstani research. The analysis covers psychological, family, school, and peer-related factors influencing bullying, with particular attention to the role of gender norms in shaping aggressive and victimized behaviors. *Results.* The findings indicate clear gender differences: boys are more prone to overt physical and verbal bullying, whereas girls more often use relational and indirect forms. Cyberbullying affects both genders almost equally, although girls are slightly more often victims. The school climate, teacher attitudes, family conditions, and peer norms strongly determine the forms and prevalence of bullying. *Scientific novelty.* The research develops a socio-pedagogical model of bullying prevention that incorporates gender-specific behavioral patterns. The study demonstrates the importance of differentiated prevention strategies for boys and girls to enhance the effectiveness of anti-bullying programs. *Practical significance.* The proposed approach can be applied in schools to strengthen preventive work, improve the socio-psychological climate, and enhance cooperation among teachers, students, and parents. It provides practical recommendations for reducing aggression, addressing cyberbullying, and fostering safe and supportive school environments where every child feels valued.

Keywords: bullying, socio-pedagogical prevention, schoolchildren, gender differences, aggression, conflict situations, cyberbullying.

Introduction. Bullying is a harmful phenomenon in school relationships in which one or several students repeatedly mistreat another. This is usually done with the intention of intimidation and is based on a power imbalance (Olweus, 1993). Bullying occurs in every country worldwide and poses a direct threat to the safety and well-being of children. According to the 2019 joint report by UNESCO and UNICEF, one in three adolescents aged 13–15 had experienced bullying in the past month - amounting to approximately 150 million students (UNESCO & UNICEF, 2019). School students who experience such bullying often develop anxiety, depression, and low self-esteem, which can lead to a decline in academic performance. The manifestations of bullying and the responses to it can vary significantly depending on gender. Research shows that boys are more inclined toward overt and physical aggression, whereas girls tend to use indirect methods such as subtle verbal remarks, spreading rumors, or social exclusion. Taking these gender-specific behavioral characteristics into account is a crucial condition for effectively planning bullying prevention programs. In the Kazakhstani context, recent research confirms similar patterns: boys are more frequently

involved in direct physical bullying, while girls tend toward relational and indirect forms. For example, Asylbekova, Atemova, and Somzhurek (2023) found that among adolescents in Turkistan region, physical bullying incidents were significantly more common among boys, whereas relational and verbal forms were more prevalent among girls, mirroring international trends. These findings underscore the importance of integrating gender-sensitive approaches into national anti-bullying strategies.

Materials and Methods. This study is based on a literature review that included both classical and recent scholarly works. The reviewed sources comprised peer-reviewed articles, books, and official reports published in international and Kazakhstani contexts.

School bullying has been actively studied in pedagogy and psychology since the late 20th century. One of the first researchers to draw scientific attention to the phenomenon was Norwegian scholar Dan Olweus, who defined bullying as a repeated form of aggression involving a power imbalance and demonstrated its widespread occurrence in schools (Olweus, 1993). Over the last decade, studies across various countries have revealed that 10–30% of students are involved in bullying-either as perpetrators or victims (Olweus, 2013). The gender dimension of bullying behavior requires particular attention: many studies indicate that boys are more likely than girls to engage in bullying (Craig et al., 2009). For example, research conducted in Iran found that the prevalence of both bullying perpetration and victimization was significantly higher among boys than among girls (p < 0.001) (Aluede et al., 2008).

However, girls are not exempt from bullying dynamics: they are more often involved in indirect forms of aggression and, in some cases, occupy the "bully–victim" role, in which they both bully others and are bullied themselves (Haynie et al., 2001). Some meta-analyses show no substantial gender gap in victimization rates: while boys are more often subjected to direct physical violence, boys and girls experience relational (social) bullying at similar levels (Card et al., 2008). Thus, boys are more frequently targeted with overt force, whereas girls are equally exposed to covert forms of exclusion and rumor-spreading (Crick & Grotpeter, 1995).

To understand these gendered patterns, researchers examine the social drivers of bullying. Boys are often socialized from childhood to resolve conflicts through direct physical force, with societal stereotypes promoting the idea that "a man should be strong and brave" influencing their behavior (Connell, 2005). In contrast, girls are discouraged from displaying open aggression, which leads them to channel hostility through indirect means (Underwood, 2003). Girls tend to place a high value on close friendships and often form smaller, more intimate groups; as a result, relational aggression such as rumor-spreading, reputation damage, and exclusion is more prevalent among girls, as these methods inflict harm by severing social bonds (Sullivan et al., 2006). According to some scholars, a girl may exclude another girl or spread rumors about her as a way to gain entry into another friendship group or to maintain her own position (Owens et al., 2000). For boys, the pursuit of status and leadership within the peer group can be a driving force behind bullying: in many cases, bullying serves as a tool for social control and competition for dominance, with the aggressor seeking to enhance his reputation among peers (Pellegrini & Long, 2002). Some studies argue that, for boys, appearing as a "real man" in the group context is a way to avoid becoming a target themselves; thus, even those who feel vulnerable may pre-emptively resort to aggression (Rodkin et al., 2015). In this sense, gendered social norms - ideas of "being a man" or "behaving like a lady" - are among the key factors underlying bullying behaviors (Connell & Messerschmidt, 2005).

In recent years, Kazakh society has begun to place greater emphasis on measures to combat violence in schools. One of the steps taken in this direction is providing every student with the opportunity to submit an anonymous complaint: schools have installed QR codes for the "111" helpline, which, when scanned, allow children to request assistance directly. This is clear evidence that significant attention is being

given to the fight against bullying at the national level.

The scientific literature identifies several main types and forms of bullying. The most frequently cited classification includes physical, verbal, social (relational), and cyberbullying (Smith, Cowie, Olafsson, & Liefooghe, 2002). This source systematically presents the most common forms of bullying and compares them at the international level (Table 1).

Table 1. *Specific features of bullying types among boys and girls*

Bullying Type	Among Boys	Among Girls	Sources
Physical bullying (hitting, pushing, damaging belongings)	Usually the most common type. Boys more often use physical force; fighting and displays of strength are considered "normal" among boys. Victims of physical bullying are also mostly boys – punching or shoving incidents are more frequently recorded.	Rarely occurs. Girls are far less likely to use direct physical violence and are less often victims of it compared to boys. Physical assault incidents among girls are exceptional cases.	Olweus, 1993; Smith et al., 2019
Verbal bullying (name-calling, mocking, threatening)	Widespread among boys, often in the form of direct insults, name-calling, and intimidation. Some boys use harsh words as an alternative to fighting.	Very common. Girls often use verbal aggression in indirect forms: giving offensive nicknames, speaking badly behind someone's back, making derogatory remarks. Studies suggest girls may engage in verbal bullying more often than boys, often combining it with social exclusion.	Archer & Coyne, 2005; Espelage et al., 2013
Social/relational bullying (exclusion, damaging reputation, spreading rumors)	Boys sometimes engage in such indirect bullying, but since they are accustomed to open confrontation, it is less frequent. In some cases, boys may try to alienate someone from a group or turn others against them, but it is not as common as among girls.	The most characteristic type. Girls often harm others by undermining their reputation rather than confronting them directly. Examples: excluding a former close friend from the group, exposing personal secrets, speaking ill behind their back. Some studies call this "girl-specific aggression".	Crick & Grotpeter, 1995; Card et al., 2008
Cyberbullying (online harassment via internet/social media)	Common among both genders. The anonymity and perceived impunity online affect boys as much as girls. Research shows little difference in frequency between boys and girls. Boys sometimes use the internet as a continuation of physical bullying (sending threats, posting offensive images).	Occurs in both genders. Since girls use social networks more often, some data suggest they are more frequently victims of cyberbullying. Examples: spreading false rumors, excluding from online groups. However, overall participation rates in cyberbullying are similar for boys and girls.	Kowalski et al., 2014; Smith et al., 2008

Note: Boys tend to use physical and direct methods more often, while girls are more likely to resort to indirect and verbal strategies; however, this difference is not absolute - each individual case depends on various factors.

Bullying emerges and develops under the influence of a combination of factors at several levels. Personal psychological traits, family circumstances, the school environment,

and the influence of the peer group - adverse conditions in any of these four areas can trigger or exacerbate bullying. Below, these factors are analyzed with attention to possible gender differences.

Psychological factors (individual behavioral characteristics) - whether or not a child participates in bullying is largely determined by their personality, temperament, and ability to regulate emotions. Students in the bully role are often described as irritable, aggressive, and low in empathy. Indeed, to exert pressure on others, a child may have an unfulfilled desire for power, a need to prove themselves, or a habit of releasing aggression outward. For instance, in the literature there is the concept of "toxic masculinity" - a social norm that silently teaches boys not to cry, not to be gentle, and to resolve any conflict with physical force. Boys raised under such attitudes may perceive sensitivity as weakness, maintain a tough demeanor, and be inclined to dominate others. Research indicates that boys who strongly adhere to traditional masculinity norms are more likely to bully peers, seeing it as a way to be a "real man" (Connell & Messerschmidt, 2005). By contrast, girls often strive to match the socially expected image of warmth and non-aggression. Fearing that expressing anger openly will make them seem "cruel" or "improper", they may avoid direct confrontation and internalize their anger. As a result, girls tend to channel anger indirectly - through gossip or social exclusion - which leads them to engage in bullying in different forms (Salmivalli, 2010).

Bullying victims also tend to have a distinct psychological profile. Some children who are targeted have low self-esteem, shyness, and introversion, making them less able to defend themselves. If such children stand out from their peers (for example, due to a physical disability, being overweight, or having weak social skills) and feel socially isolated, bullies may exploit these vulnerabilities (Cook, Williams, Guerra, & Kim, 2010). At the same time, in some cases the victim may also display aggressive behavior. Certain students experience ostracism from classmates due to generally aggressive conduct, or their inability

to respond effectively to bullying leads to internalized anger, which may later drive them to target another, more vulnerable peer. In psychology, such a dual role is described by the concept of the *bully-victim* - a child who is both a perpetrator and a target of bullying. These children often struggle with emotional regulation and exhibit both external and internal distress. Studies have found that children with emotional and behavioral problems are more frequently involved in bullying - because their ability to channel feelings such as anger and resentment constructively is underdeveloped, they are more prone to conflicts, ending up either hurting others or being hurt themselves (Zych, Farrington, Llorent, & Ttofi, 2019).

When discussing psychological factors in bullying, gender differences should not be overlooked. Boys more often exhibit *externalizing* behaviors (e.g., fighting, physical aggression), whereas girls tend to respond with *internalizing* reactions (e.g., anxiety, depression, guilt). As a result, bullying among boys is often more visible and overt (physical harm, direct insults), while girls' bullying may be less noticeable (silent exclusion, passive resistance). Additionally, children who do not conform to gender norms are at particular risk. If a boy is perceived as feminine or a girl as masculine, peers may begin to punish them socially. Teasing or mocking for deviating from gender stereotypes - sometimes called *gender-based bullying* - can be carried out both by peers of the opposite sex and by those of the same sex. For instance, feminine boys may be mocked by other boys as "sissies," while overly assertive girls may be disliked and excluded by other girls.

Family factors -the family is the first and most important environment in which a child's behavior is formed. Therefore, family circumstances have a significant impact on the development of a propensity for bullying. Children who become bullies often grow up in households characterized either by strict authoritarian control or, conversely, by a lack of supervision. Research shows that frequent conflicts between parents, parental abuse, harsh punishment, or neglect can increase the

likelihood that a child will become an aggressor among peers (Baldry & Farrington, 2000). For example, a child from a home where constant quarrels or violence occur may come to see resolving disputes through force as normal. In some cases, children who experience violence at home (being physically beaten or subjected to psychological pressure) may target weaker peers outside the home as a way to release their own anger and fear.

School factors-school climate and discipline are among the key factors determining whether bullying will spread or be eradicated. If school rules are lax, a culture of cruelty exists among students, and educational work is poorly organized, bullying incidents will inevitably become more frequent. Research confirms that students who perceive the school environment as unfavorable are more likely to engage in bullying; in groups where bullying is observed, the level of school satisfaction is significantly lower (Wang, Berry, & Swearer, 2013). Conversely, when the school provides a safe, supportive environment - where every student feels like a respected member and teachers act fairly and maintain supervision - bullying can be effectively curtailed. Among the most important school-related factors are: the school's anti-bullying policy, the extent of teacher intervention, the adequacy of supervision, and the fairness of disciplinary measures. If the school administration turns a blind eye to bullying or fails to take appropriate action, aggressors will feel a sense of impunity and continue their abuse. In some cases, teachers themselves may humiliate or belittle certain students, prompting the whole class to exclude that student - this can be considered a starting point for bullying. Such breaches of professional ethics by teachers can be particularly harmful for boys, fostering an atmosphere that glorifies physical dominance. In the case of girls, some teachers may ignore minor social conflicts, dismissing them as "girls own business", while in reality allowing serious psychological abuse to occur.

Gender stereotypes may also exist among teachers: for instance, dismissing boys' fights as "boys being boys", or viewing girls' gossip and rumors as "harmless fun", both of which contribute to the persistence of bullying. Therefore, a zero-tolerance culture toward all forms of bullying must be established in schools.

Another important factor is classroom organization and monitoring of key areas. Bullying typically occurs in places where adults are not watching (corridors, schoolyards, on the way to and from school). If teachers take turns supervising the corridors during breaks, and schoolyard monitors are present, bullying can be detected and stopped early. Additionally, if school rules specify clear consequences for bullying (e.g., counseling, working with parents, or, if necessary, temporary suspension), students will understand that there are repercussions and will be less likely to engage in aggression. In conclusion, the internal school climate is a primary factor influencing the prevalence of bullying. To create a positive and cooperative climate, school administrators, teachers, students, and parents must work together (detailed recommendations are provided in the "Suggestions" section).

Some studies also indicate that low socioeconomic status can play a role: factors such as unemployment, poverty, or parental alcoholism can contribute to a child's being filled with anger and growing up without adequate guidance (Tippett & Wolke, 2014).

Peer factors-for children and adolescents, the peer group is both a setting for personality development and a social arena where bullying can flourish. The influence of peers works in two ways: if a group embraces violent tendencies and holds the misguided belief that "the strong should dominate the weak," any child may succumb to group pressure and become a bully (Salmivalli, 2010). For example, if a teenager's friends make fun of other children, the teenager may follow suit in order to conform - a phenomenon known as conformity. Research has shown that having a "bully friend" dramatically increases the likelihood that a child will engage in bullying: the aggressive friend's influence draws the child toward adopting an aggressive style (Salmivalli, 2010). Sometimes a high-status peer targets someone, prompting others

to join in collective bullying. Group norms play a critical role: if the majority in a class dislikes a particular student, others may feel pressured to share that view; conversely, if the group upholds an anti-bullying culture, individual aggressors receive no support and are likely to stop. The peer factor also has a protective side. If a child has friends who support them, bullies are less likely to target them. Studies have confirmed that children without friends are at higher risk of victimization: in one study, students with no friends were found to have a 1.5 times higher likelihood of being bullied (Gardner, Demaray, & Malecki, 2021). Conversely, children with even a small circle of trusted friends are significantly less likely to be bullied. This effect is especially pronounced in primary school - a "close friend" may be the only person who can shield a child from group ridicule.

From a gender perspective, while the importance of the peer group is equally high for boys and girls, the dynamics differ. Boys often want to appear confident and strong, and may use teasing or physical aggression toward weaker peers to gain status among friends - behavior that peers may support or dismiss as "fun" if no one in the group challenges it. Among girls, group dynamics often take the form of small cliques that can exclude a peer; if the clique leaders dislike a girl, others may also stop interacting with her. Such clique behavior is a typical form of relational bullying in girls' peer groups.

The role of bystander peers is crucial in combating bullying. If other students witnessing the incident respond appropriately (e.g., by intervening or informing a teacher) and refrain from supporting the bully, the harassment is unlikely to continue. Conversely, if peers laugh or show interest while someone is being humiliated, the bully perceives this as encouragement and escalates their aggression. For this reason, modern prevention programs aim to shift students from a passive bystander role to an active defender role - this will be discussed in the next section.

Although gender sensitivity is not always explicitly stated in many programs, it is, in practice, taken into account. In some countries, there is a practice of conducting separate group trainings for girls and boys in bullying prevention: for example, in all-girl circles, discussions are held to address issues such as gossip and betrayal of confidences among girls; for boys, special sessions are organized to explain that admitting vulnerabilities or showing compassion does not contradict masculinity. A study conducted in Sweden highlighted the need for schools to address gender norms - that is, to discuss and challenge rigid stereotypes about how girls and boys are "supposed" to behave (Huuskonen et al., 2021). Some gender-focused interventions are specifically designed to target sexually oriented forms of bullying (e.g., mocking girls for their appearance or engaging in homophobic bullying). These may include lessons on gender equality, sexual education, and teaching respect for diversity. Such approaches complement general anti-bullying programs and enhance their effectiveness.

Results. The findings from the reviewed studies reveal clear gender differences in bullying behaviors. Boys were consistently more involved in physical and direct forms of bullying, whereas girls more frequently engaged in relational and indirect forms such as social exclusion and rumor-spreading. Verbal bullying was common among both genders but often manifested differently - direct insults among boys and covert language aggression among girls. Cyberbullying prevalence showed no consistent gender gap, with both boys and girls participating at similar rates, although some studies noted higher victimization rates among girls.

Beyond gender differences, the literature also indicates variations by age, psychological traits, family background, school environment, and peer group dynamics. The following sections present the key patterns identified across these domains (Table 2).

Table 2. *Key Categories, Findings, and Sources on Gender Differences in School Bullying*

Category	Key Findings	Representative Sources
Types and Prevalence of Bullying	Physical, verbal, social/relational, and cyberbullying identified as main forms. Boys more often involved in physical bullying; girls more in relational bullying. Verbal bullying common for both; cyberbullying prevalence shows minimal gender difference.	Olweus (1993); Archer & Coyne (2005)
Psychological Factors	Perpetrators often show low empathy, impulsivity, aggressiveness; "toxic masculinity" reinforces boys' physical dominance. Girls tend toward indirect aggression. Victims often socially isolated, low self-esteem, sometimes reactive aggression.	Salmivalli (2010); Zych et al. (2019)
Psychological Factors	Perpetrators often show low empathy, impulsivity, aggressiveness; "toxic masculinity" reinforces boys' physical dominance. Girls tend toward indirect aggression. Victims often socially isolated, low self-esteem, sometimes reactive aggression.	Salmivalli (2010); Zych et al. (2019)
Family Factors	Exposure to domestic violence, harsh discipline, neglect, and low parental monitoring linked to bullying. Low socioeconomic status, unemployment, and parental substance abuse increase risk.	Baldry & Farrington (2000); Tippett & Wolke (2014)
School Factors	Negative school climate, weak enforcement, low teacher intervention, tolerance for aggression linked to higher bullying rates. Positive climate and clear policies reduce bullying. Teacher bias and gender stereotypes may perpetuate it.	Wang et al. (2013)
Peer Factors	Peer group norms strongly influence behavior. Bully friends increase perpetration likelihood; supportive friends	Gardner et al., (2021)

Note. Data synthesized from multiple studies. Representative sources indicate key contributions rather than an exhaustive list. Gender-specific patterns are summarized based on reported tendencies across studies.

The data in the table clearly illustrate the types of bullying and their gender-specific patterns among the surveyed students. Boys were more likely to engage in physical bullying (direct use of force) and direct verbal bullying. In contrast, girls more frequently exhibited relational (social) and indirect bullying (social exclusion, rumor-spreading). While the level of cyberbullying involvement was similar across genders, girls were slightly more likely to be victims. These differences may be linked to gender role expectations, strategies for building social status, and interpersonal communication styles. The findings indicate that bullying among schoolchildren has distinct gender characteristics, which are intertwined with various socio-pedagogical factors. Comparing these results with previous research, analyzing their causes and consequences, and identifying implications for prevention strategies are essential for understanding the broader picture.

Discussion. The present study examined gender differences in the forms of bullying among schoolchildren, providing both descriptive data and comparative analysis. The findings confirm patterns widely reported in previous research: boys tend to engage more in physical and direct verbal bullying, while girls are more inclined toward relational and indirect forms. These results are consistent with seminal works by Olweus (2013), Smith et al. (2019), and Salmivalli et al. (2011), which have demonstrated that gendered socialization processes influence the preferred forms of aggression. In particular, the tendency of boys toward overt and confrontational behaviors can be linked to traditional masculine norms emphasizing dominance, competitiveness, and physical assertiveness (Connell, 2005). Conversely, girls greater use of relational bullying is often associated with the maintenance and manipulation of social relationships,

which is in line with gender role expectations emphasizing interpersonal sensitivity and social cohesion.

Interestingly, our study found that cyberbullying prevalence was similar between boys and girls, yet victimization rates were slightly higher among girls. This finding aligns with research by Barlett and Coyne (2014), which notes that the anonymity and non-physical nature of cyberbullying make it a more "gender-neutral" form of aggression. However, girls' greater involvement in social networking platforms and their emphasis on peer approval may increase their vulnerability to online victimization (Kowalski et al., 2014). In the Kazakhstani context, where smartphone usage among adolescents is nearly universal (UNICEF, 2021), the risk of cyberbullying is heightened, making prevention programs particularly urgent. The results also suggest that gender differences in bullying are not only behavioral but also socio-pedagogical in nature. The school environment, peer group dynamics, and teacher-student relationships shape how bullying manifests and is perceived. For example, peer group norms that tolerate physical dominance may reinforce boys' use of direct bullying, while peer validation of social manipulation may normalize relational aggression among girls (Salmivalli, 2010). In Kazakhstan, where collectivist cultural norms emphasize group harmony, relational aggression may remain underreported, as it is often mistaken for typical peer conflict rather than recognized as a form of bullying.

From a socio-pedagogical perspective, these findings highlight the necessity of gender-sensitive prevention strategies. While general anti-bullying programs-such as the Olweus Bullying Prevention Program (OBPP), KiVa, and Steps to Respect-have demonstrated broad effectiveness (Ttofi & Farrington, 2011), tailoring interventions to address gender-specific behaviors can enhance their impact. For boys, programs should focus on emotional regulation, conflict resolution, and non-violent problem-solving skills. For girls, prevention efforts should address social manipulation, empathy development, and the creation of inclusive peer networks.

Additionally, cyberbullying prevention must be integrated into both gender-focused and general school policies. Digital literacy programs, parental engagement in monitoring online behavior, and safe-reporting mechanisms-such as anonymous hotlines-should be central to the prevention framework. In the Kazakhstani educational system, where government initiatives have recently introduced "111" child helpline QR codes in schools, these measures represent an important step but must be accompanied by teacher training and peer-led awareness campaigns to ensure real effectiveness. In conclusion, the study reaffirms that bullying is a gendered phenomenon that requires nuanced, culturally responsive interventions. Addressing both the overt and covert forms of bullying, as well as the rapidly growing challenge of cyberbullying, will be essential for creating safe and supportive school environments. Future research should further explore the intersection of gender, culture, and digital media in shaping bullying behaviors, thereby informing the next generation of prevention strategies in Kazakhstan and beyond.

Conclusion. Bullying in schools is a complex social phenomenon that, while impossible to eliminate entirely, can be significantly reduced through systematic prevention measures. It should not be viewed merely as a conflict between two students, but as an indicator of the overall school culture. Therefore, prevention must focus on improving this culture and creating a safe and supportive environment. Taking gender differences into account is essential: boys should be made aware of the harm caused by physical aggression and be offered peaceful alternatives such as sports and games, while girls should be encouraged to develop open communication, mutual support, and emotional resilience.

Effective prevention must involve the entire school community. Teachers and psychologists need to be trained to recognize early signs of bullying and respond appropriately, while school regulations should clearly state that violence and insults are not tolerated. Student participation also plays a crucial role: volunteer activities, peer mediation, cultural and

creative projects all help to foster a climate of friendship and respect. Anonymous reporting systems and "trust channels" must be in place to ensure students feel safe when seeking help. Parental involvement further strengthens prevention. Seminars, parent committees, and family support programs can encourage empathy, reduce aggression, and promote more constructive parenting practices. In addition, accessible psychological services and lessons that develop emotional intelligence, empathy, and tolerance represent important directions for schools. Thus, a bullying-free school is one where every child feels safe, valued, and able to fully realize their potential. Achieving this goal requires the joint efforts of teachers, parents, students, and society at large. Only then will the school truly become a second home, a place where children feel protected and respected.

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Measuring the Professional Competencies of Future Teachers

Abstract

Introduction. The article is aimed at studying the problem of measuring and evaluating teachers' professional competencies, which is related to updating the content of education and the need to ensure high-quality training for future teachers. *Methodology and methods.* As part of the study, a detailed analysis of regulatory documents and relevant scientific publications on this topic was carried out. Based on the professional standard of teachers, a diagnostic methodology has been developed aimed at assessing professional competencies. *Results.* The analysis showed that the majority of teachers demonstrate an average level of competence formation in such areas as pedagogical values, professional knowledge, pedagogical practice and professional development. At the same time, a high level of competence is distinguished by the following criteria: pedagogical orientation and responsibility; knowledge of the subject and teaching methods; awareness of the age characteristics of children and their motivation; skills in planning the educational process; as well as the ability to project personal professional growth and leadership development. Some problem areas requiring attention were also identified, including low proactivity and innovation in learning, difficulties in risk management, lack of knowledge in creating an inclusive educational environment, as well as weak teaching skills in multilingual classrooms and ensuring security in the digital space. *Scientific novelty.* This study helps to understand the specifics of the formation and measurement of professional competencies in the process of training future teachers. As a result of the work, the author's diagnostic method was developed and tested, which allows an objective assessment of the level of competence among students of pedagogical fields. *Practical significance.* The presented approach can be implemented in practical activities for monitoring and evaluating the quality of vocational education. The obtained results and conclusions of the study can become the basis for the development of educational programs and advanced training courses for teachers aimed at the effective development and strengthening of their professional competencies.

Keywords: professional competencies, professional standard, pedagogical measurement, competence assessment, competence approach.

Introduction. In modern conditions, there is an acute need for teaching staff possessing professional competencies that correspond to the requirements of the time and the provisions of professional standards. These standards define qualification requirements, competencies, and professional functions of teachers, serving as the basis for the design of educational programs (Order, 2022). The formation, development, and assessment of professional competencies have become the most important elements of educational policy, directly influencing the quality of teacher training (Akhmetov, 2023; Yersultanova, 2023; Abdiev, 2024; Sabharwal & Miah, 2024).

In Akhmetov's study, key problems related to the functioning of the national system of quality assessment in education were identified.

These include shortcomings in testing materials, difficulties in monitoring educational outcomes, a mismatch between graduates' competencies and employers' expectations, a shortage of qualified experts in educational measurement, and challenges in developing criteria for assessing knowledge, skills, and abilities. As a solution, the author proposed a quality management model in education that includes the following stages: goal-setting, planning, design, implementation, support, monitoring, analysis, and adjustment of educational activities (Akhmetov, 2023). Yersultanova, Kunakova, and co-authors emphasize the importance of the professional standard as the basis for assessing the readiness of social pedagogues for professional activity. Their approach suggests the inclusion of standard requirements in the content of university programs (Yersultanova, 2023). Abdiev and colleagues analyze the difficulties of implementing professional standards in IT education. The main problems concern the vagueness of requirement formulations, the lack of measurability, and the formal approach of universities to the development of educational programs (Abdiev, 2024). Sabharwal and Miah propose a machine learning model for assessing teacher effectiveness. This model makes it possible to take into account the contribution of various resources to the learning process and to monitor its results, demonstrating advantages compared to other similar approaches. The relevance of assessing teachers' professional activity is also reflected in the works of Shadrikov and Kuznetsova (2012), who emphasize the need to improve teacher training. The competence-based approach, which has become dominant in the modern higher education system, makes it possible to reconcile employers' requirements and future specialists' expectations (Zaitseva et al., 2024). It influences teaching, learning methods, program content, and assessment systems. Modern researchers propose new approaches to diagnosing competencies, based on labor market requirements and professional standards. This contributes to systemic changes in the university educational process. The importance of educational measurement is also highlighted in the context of the competency-based graduate model (Aigunova et al., 2017; Isupova, 2024). According to the authors, the teacher's model as a bearer of professional competencies is closely connected with competitiveness, mobility, and readiness for professional growth. International projects such as Tuning, iPAL, and AHELO have made a significant contribution to the development of tools for assessing students' professional and universal competencies. They are aimed at substantiating unified approaches to the evaluation of learning outcomes in higher education (Avdeeva et al., 2021). Nevertheless, despite the accumulated theoretical and methodological experience, the problem remains of the absence of a comprehensive and valid system for diagnosing, monitoring, and assessing students' professional competencies (Akhmetnov, 2023; Ushakova, 2024).

The modern education system imposes increased demands on the quality of teacher training. However, practice shows that graduates do not always demonstrate a level of professional readiness that meets employers' expectations and the requirements of the educational system. A contradiction thus arises between the need for objective and comprehensive measurement of prospective teachers' professional competencies and the insufficient development of theoretical and methodological foundations for such measurement. Existing diagnostic approaches often do not provide systematic and valid assessment, which complicates the identification of students' professional deficits and the adjustment of educational programs. In these conditions, the task of objective, comprehensive, and systematic measurement of future teachers' professional competencies and the determination of directions for their further development becomes particularly relevant. This is of interest not only to students and educators themselves but also to employers and other stakeholders. We believe that only through systematic and comprehensive diagnostics of the quality of teacher education, along with continuous analysis of competency formation, is it possible to ensure the high effectiveness of teacher preparation.

Based on the reviewed literature and our practical experience in implementing the competency-based approach in teacher education, it can be argued that both methodological and practical tasks remain relevant. In particular, the development of diagnostic methods, measurement tools, and their integration into the educational process requires a serious scientific approach.

In this regard, the central research question is: What is the level of formation of key professional competencies among future teachers during their university education, taking into account the requirements of the professional standard?

The purpose of the study is to assess the level of formation of prospective teachers' professional competencies using a diagnostic methodology based on professional standards. This will make it possible to identify professional deficits and determine the vectors of further development of professional competence.

Materials and Methods. The following methods were used in the present study: theoretical analysis of the problem from primary sources; content analysis of scientific and methodological literature; analysis of normative documents regulating professional training; study and generalization of advanced pedagogical experience in the field of competence diagnostics; observation; questionnaire and survey on the research problem. The research materials were scientific works of domestic and foreign scientists on diagnostics and pedagogical measurements of professional competencies.

The difficulties of measuring and evaluating the quality of pedagogical activity are the subjects of research by many modern scientists, both domestic and foreign.

Aspects of the consideration of this problem are diverse:

- expert assessment of professional competencies with the involvement of highly qualified experts and artificial intelligence technology as an expert tool (Shadrikov & Kuznetsova, 2012; Nazarova & Panasenko, 2024);

- assessment of professional competencies using the competency model of the teacher (Aigunova et al., 2017; Isupova, 2024);

- development and implementation of a comprehensive model of assessment based on a professional standard of basic teacher competencies (Ajjawi et al., 2021; Sukhovienko et al., 2021, Gromova, 2024);

- application in the educational process of universities of different approaches to measuring the formation of professional competencies (Aglamova et al., 2018, Zaitseva et al., 2024);

- analyzing the final certification of teachers' professional competencies with the expected results of the professional standard (Ersultanova et al., 2023);

- research the structure of teachers' professional competencies in the context of modern requirements, to create a comprehensive system of professional competencies, which acts as both a tool for assessing competencies and a means of professional development (Seitenova et al., 2024);

- analyzing and developing reliable and objective methods and tools for measuring the quality of pedagogical activity (Yusof et al., 2019, Baskeeva, 2024, Abdiyev et al., 2024);

- evaluation of future teachers' professional competencies based on criterion-level assessment (Golovchin, 2023);

- application of modern digital tools in measuring professional competencies with: digital portfolio (Tikhonova, 2021), ML portfolio assessment (Sabharwal et al., 2024), case (Skorova et al., 2021), digital case studies (Renkiewicz et al., 2024).

Research in the field of pedagogical measurement and quality assessment of education covers the effectiveness of educational programs of teacher training, teaching methods, control, and the use of innovations in education. Modern research emphasizes the importance of individualization of education, adaptation of educational programs to the needs of students and the labor market, use of information and communication technologies, digitalization of education, and many other aspects affecting the quality of education and the success of students (Tzafilkou et al., 2023).

It follows from the above that modern research into the problems of measuring and evaluating professional competencies plays a

key role in improving education and increasing its effectiveness. They contribute to the development of a professional and pedagogical culture of a teacher, to the improvement of the process of professional training of pedagogical staff, and the enhancement of education in general

This study continues several works that studied the impact of standards on improving the quality of professional education and their use as tools for assessing teacher training (Ajjawi et al., 2021; Ersultanova et al., 2023; Sapieva et al., 2024). When carrying out the procedure for assessing the quality of teacher training and competence, we are guided by the professional standard "Teacher" (PS). This document sets general and uniform requirements for professional knowledge, skills, and abilities, as well as defines the boundaries of qualification characteristics for performing the main functions in professional and pedagogical activities (Order, 2022)

Implementation of the standard requires the creation of a system of diagnostics of compliance of professional training of pedagogical staff with its requirements (Sapieva et al., 2024). Standards for teachers, on the one hand, perform a normative function, i.e., set standards of professional practice, on the other hand, a developing function, i.e., promotes the individual growth of a teacher throughout life. Taking into account the opportunities for professional and personal development of a teacher, maximizing the potential of formal and informal learning, as well as the wide application of various forms and methods of improving professional skills, are common trends used in the practice of measuring and assessing the quality of pedagogical work.

Each country has its requirements for the professional competencies of teachers. For example, in Great Britain, the emphasis is on the development of teaching and personal professional competencies of a teacher without level division, while in Austria, a level approach is applied in the description of competencies, covering from the qualification of a university graduate to a manager. In CIS countries, and in particular in Russia, professional standards in the description of teacher competencies are based on knowledge and skills required to perform professional and labor functions in various spheres of professional activity, with the definition of qualification levels (Order, 2016). In Kazakhstan, professional standards also apply a level approach in describing professional competencies, starting from the entry into the profession and ending with professional mastery, with the definition of criteria and indicators structured according to the principle of build-up (Order, 2022).

The experience of studying the theory and practice of pedagogical measurement of professional competencies has shown that it is necessary to rely on normative documents regulating uniform requirements for professional competencies, international and domestic experience of quality assessment of pedagogical activity, and innovations in education. The material for measuring PC should be selected taking into account all types of teachers' activities through the prism of professional competencies (knowledge, ability, skill), as well as the performance of professional labor functions, actions, and operations. Given the complexity of the studied construct (professional competencies), it is important to measure and evaluate all its components separately and in their totality.

The system of quality assessment of teacher training modernization relies on the modern theory of pedagogical measurements and the introduction of reliable and objective measurement methods and tools. Our study attempted to develop and validate a tool for measuring the professional competencies of future teachers. Our study aims to diagnose and obtain reliable information about the competencies of future teachers, while the task is to assess the level of their competence to identify professional deficits and determine the prospects for the development of professional competence.

The pedagogical experiment was conducted at Kokshetau University, named after Sh. Ualikhanov. The study involved students of 3-4 courses of pedagogical direction of training, within the framework of educational programs:

informatics, mathematics and physics, chemistry and biology, Russian language and literature, as well as pedagogy and methodology of elementary education, pedagogy, and psychology.

Results. Based on the analysis of labor actions, the questionnaire "Diagnostics of professional competencies of a teacher" was developed and implemented. The questionnaire consists of questions divided into four blocks. The first block is aimed at identifying the competence "ability to perform professional activities on the basis of pedagogical values".
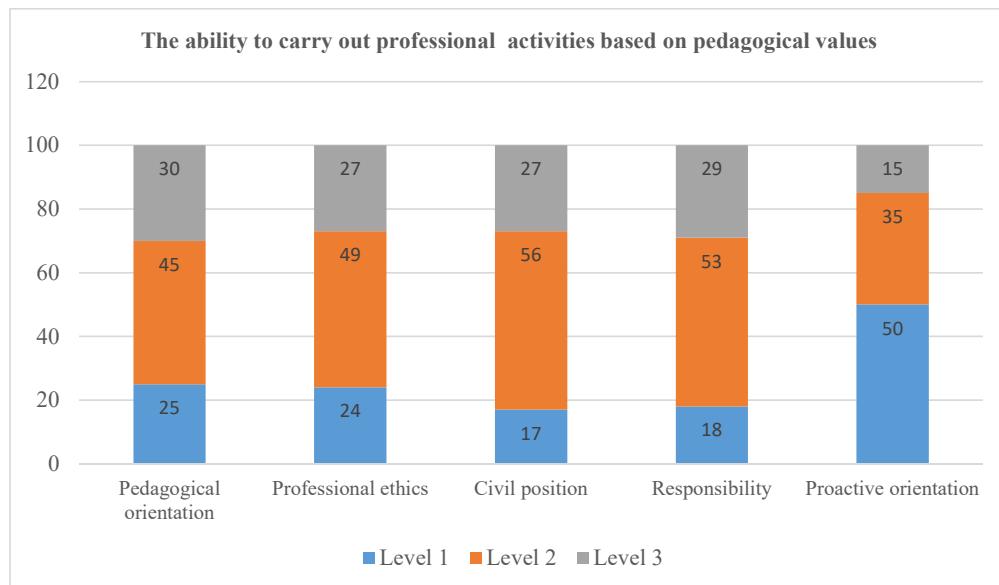
Figure 1: Results of measuring the competence "ability to perform professional activity based on pedagogical values"

The results of the study showed that the average level of formation prevails for all the above criteria, except for the low level of the criterion "proactive orientation

The second block of questions of our diagnostic methodology concerned the identification of the competence "able to use professional knowledge to solve pedagogical problems". The criteria for this competence were knowledge of students' peculiarities, subject, methodological, and evaluation knowledge.
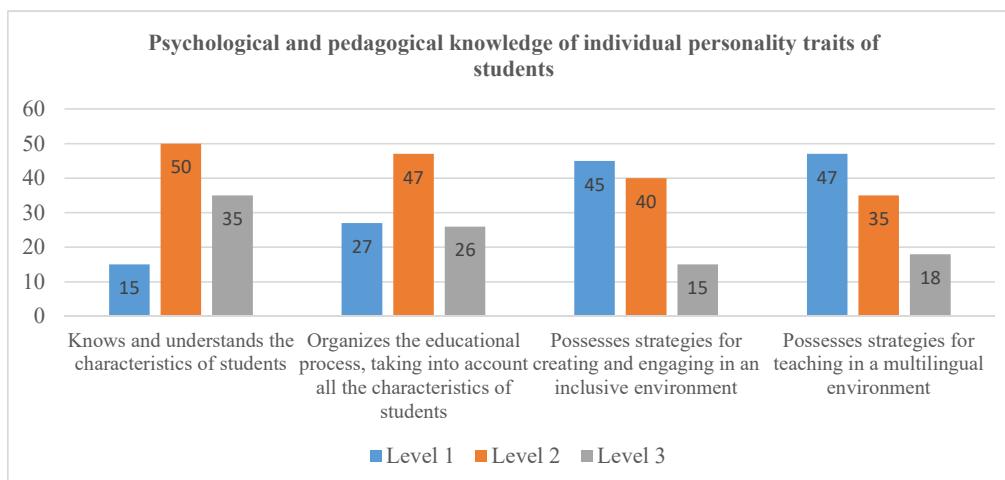
Figure 2: Results of measuring the competence "able to use professional knowledge to solve pedagogical tasks" by the criterion "psychological and pedagogical knowledge of students' personality traits"
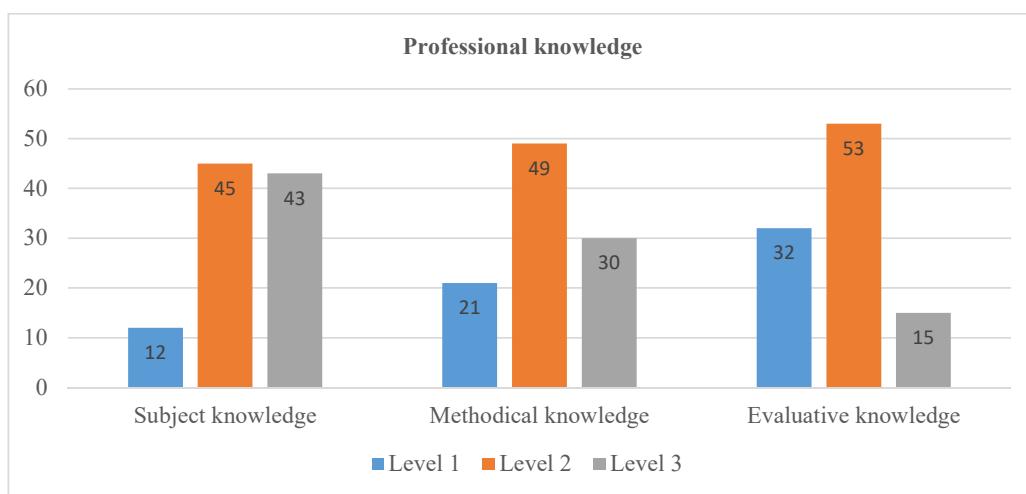
**Figure 3: Results of measuring the criterion "subject, methodical,
and evaluation knowledge"**

As can be seen in Figures 2 and 3, the results of diagnostics for all criteria of the competence "able to use professional knowledge to solve pedagogical problems" demonstrate the prevalence of the average level of formation.
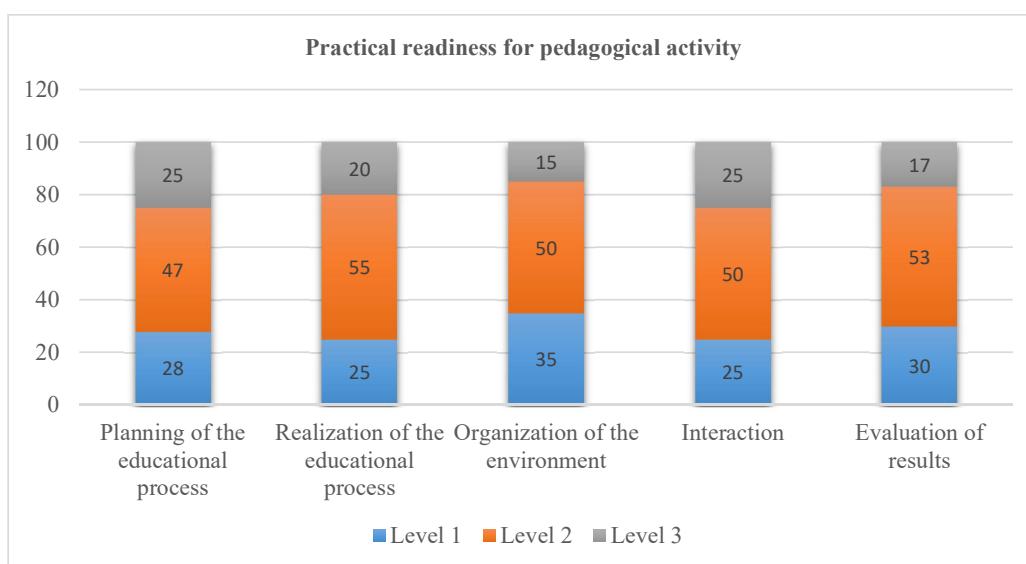
**Figure 4: Results of measuring the competence "practical readiness
for pedagogical activity"**

The third block of questions concerned the identification of the competence "practical readiness for pedagogical activity". This competence was identified by criteria such as planning and implementation of the educational process, organization of effective interaction and developmental environment, and evaluation of learning and education results. Figure 4 shows the prevalence of the average level of expression for all indicators of this competence (47-55%).
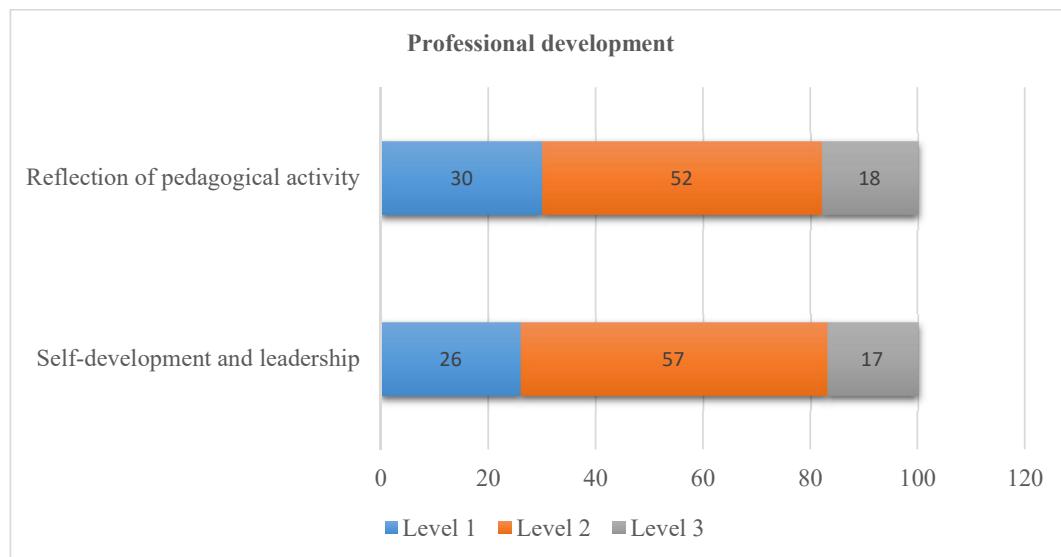
Figure 5: Results of measuring the competence "readiness for professional growth and development"

The fourth block of the study was devoted to identifying the competence "readiness for professional growth and development". The key criteria for this competence were identified: the reflection of the pedagogical activity, leadership, and professional self-improvement. Figure 5 shows the predominance of the average level of expression for all indicators of this competence (52-57%).

Discussion. Generalized diagnostic results for all criteria of the competence "ability to perform professional activity based on pedagogical values" demonstrate the prevalence of the average level of formation (47.6%). The exception was the criterion "proactive orientation", which was recorded at a low level (50%). Let us consider each of the criteria in more detail.

Pedagogical orientation and dedication to pedagogical activity we analyzed through the manifestation of pedagogical optimism, belief in the potential, opportunities, and abilities of students, as well as through the performance of professional functions based on pedagogical principles and regulatory requirements. As can be seen from Figure 1, 30% of respondents demonstrated a low level of this criterion, 45% an average level, and 25% a high level. The respondents showed good knowledge of normative and legal acts, pedagogical principles, and functions of professional activity, but

revealed a weak manifestation of pedagogical optimism about students and their motivation in achieving educational goals.

According to the criterion "professional ethics," the levels of competence formation are distributed as follows: high - 24%, average - 49%, low - 27%. We study the ethical component of this professional competence through the teachers' observance of moral and ethical principles, pedagogical tact, and respectful attitude to all subjects of the pedagogical process, as well as through the culture of teacher behavior. Pedagogical ethics is a determining component of professional competence, a regulator of the interaction of all subjects of the pedagogical process, and a determinant of the effective professional activity of a modern teacher. Future teachers possess a set of knowledge for adequate ethical assessment of the situation and making pedagogical decisions, i.e., the cognitive component of professional ethics, but there are problems with the realization of practical skills and abilities, i.e., the development of the activity component of professional ethics.

According to the criteria "civic position of a teacher" (level 1 - 17%; level 2 - 56%; level 3 - 27%) and "responsibility for pedagogical activity" (level 1 - 18%; level 2 - 53%; level 3 - 29%) there are similar results in the levels of formation of the studied competence. The civic position of a teacher was considered by us as a

moral quality that determines the conscious and active fulfillment of his/her civic duties. It is based on intercultural respect, national values, and consideration of the educational needs of representatives of all peoples of Kazakhstan, as well as observance of academic honesty in pedagogical activity and reasonable use of civil rights. The surveyed students experience certain difficulties in the realization of integrative skills related to the introduction of intercultural diversity in the educational process.

The analysis of respondents' answers to the criterion "responsibility for pedagogical activity" has shown that more than half of the respondents demonstrate an average level of responsibility. The teacher's responsibility was assessed through the competence-based performance of his/her activity, self-regulation of professional behavior, value attitude to all subjects of the integral pedagogical process (IPP), and creation of optimal conditions for their development. The respondents demonstrate high responsibility in the sphere of professional growth and development of themselves as specialists. However, there are difficulties related to the division of responsibility with their colleagues for the organization of the educational process, for the safety of students, and their training and education.

Proactive orientation is considered as a teacher's awareness of his/her priorities, his/her ability to adhere to principles, subordinate circumstances to his/her values, as well as freedom of will and choice. It is manifested in the desire to improve professional practice, active search for and implementation of pedagogical innovations, forecasting the results of this activity, and regulating behavior under conditions of uncertainty and stress. In modern conditions, proactivity becomes one of the key skills of a successful teacher. More than half of the respondents demonstrated conservatism about the implementation of innovations in education, which indicates weak skills of stress resistance and risk management in pedagogical activity, as well as a low level of proactivity (50%). These data emphasize the need to strengthen and develop this competence among teachers.

According to the results of measuring the competence "able to use professional knowledge to solve pedagogical problems", Figure 2, it can be seen that according to the criterion "psychological and pedagogical knowledge of student's personality traits," there is a predominance of the average level in the teacher's understanding of students' personality traits (50%) and their consideration in the educational process (47%). The respondents showed insufficient competence related to the consideration of the educational and educational needs of students in the implementation of inclusion (45%) and polylingualism (47%) in the educational process. Students demonstrated a high level of subject knowledge, knowledge of curricula, and use of ICT. The respondents had difficulties in the implementation of methodological and evaluative knowledge: in the methodology of building an individual educational trajectory, the methodology of practice-oriented teaching and learning, and the methodology of evaluating the results of teaching and learning.

Figure 4 shows the results of measuring the competence "practical readiness for pedagogical activity" and reveals a good level of ability to plan the teaching and learning process, taking into account the set goals, but the ability to involve all its subjects in this process is poorly expressed. The criterion "implementation of the educational process" revealed high indicators of skills in motivating students and achieving goals in specific classes, teachers have difficulties in applying pedagogical technologies and adapting them to the individual needs of students. The criterion "organization of the environment" demonstrated quite high indicators in creating safe conditions for individuals in the educational environment and in providing pedagogical support. However, educators face difficulties in ensuring the safety of students in the digital environment. Since the digital environment is a rapidly developing area in education and is still insufficiently studied, there is a need to develop the competencies of educators in the field of ensuring the safety of students in this environment. Also within the framework of this criterion, the problem of creating conditions

for the development and motivation of students with special educational needs is identified. Analysis of the criterion "assessment of learning and education results" revealed several problems related to the use of measurement tools, checking their reliability, validity, and objectivity, development of assessment criteria, as well as analysis of assessment results to adjust and improve teaching methods. An equal number of teachers demonstrate both high and low levels of competence in the criterion "cooperation in the teaching and learning process". The study revealed high indicators of interaction with other teachers in professional communities aimed at improving the teaching and learning process. However, difficulties in interaction with the parent community to develop an individualized track of students' development were revealed. The overall analysis of the results for the competence "practical readiness for pedagogical activity" showed that 21% of respondents demonstrated a high level, 51% - an average level, and 28% - a low level of formation of this competence.

Analysis of the results for the competence "readiness for professional growth and development", Figure 5, showed the prevalence of the average level of this competence. According to the criterion "reflection of pedagogical activity," 18% of surveyed teachers have a high level, 30% - a low level, and 52% - an average level of expression of this indicator. Teachers have projective skills to improve their professional level, analytical and reflexive skills related to the improvement of their activity, and continuous professional development. At the same time, they experience difficulties in the objective assessment of their activities in interaction with other CPS subjects.

Leadership is an important competence for modern educators, as it plays a central role in the organization and effective management of the educational process (Valyaeva, 2022). This competence allows for the establishment of productive interaction in a professional team, the successful use of collaborative strategies to achieve goals, and contributes to professional development (Rerke et.al, 2020). The analysis of respondents' answers on the criterion "self-development and leadership" showed that 26% of respondents demonstrated a critically low level of this competency, 17% - high level, and 57% - medium level. The study revealed that teachers have good indicators in searching for methods and forms of professional development, as well as in monitoring their professional achievements and growth trajectory. However, certain difficulties were noted in analyzing the practice of colleagues, their involvement in self-assessment of their competencies, dissemination of positive experiences, and providing professional support to trainees. This emphasizes the need for both the development of students' personal qualities and special training in leadership and professional development skills.

Conclusion. In the framework of our research, we have studied the professional competencies of future teachers. As a result, the author's methodology for diagnostics of the level of formation of professional competencies of teachers was proposed. The results of the study revealed the prevalence of the average level of formation of such competencies as the "ability to perform professional activity based on pedagogical values", "able to use professional knowledge to solve pedagogical problems", "practical readiness for pedagogical activity" and "readiness for professional growth and development". For each criterion of the considered competencies, the strengths and weaknesses of the process of professional training of pedagogical staff were identified. The positive points are a high level of pedagogical orientation and responsibility, subject and methodological knowledge, knowledge of children's characteristics and their motivation, skills in planning the pedagogical process and organization of the educational environment, ability to design their professional level, and development of leadership qualities.

Certain problem areas that require attention have been identified, including low levels of proactivity and innovation in pedagogy, inability to manage risks, lack of knowledge and skills in creating inclusive environments, as well as weak skills in teaching in multilingual environments and ensuring safety in digital environments. Universities, colleges, and further education

institutes that provide professional training for educators need to develop a comprehensive approach to each area of identified professional deficits. The results of our study provide insights into the current state of teachers' competencies and their compliance with the requirements of the standard. The applied diagnostic methodology helps teachers to see their weaknesses and professional deficits and develop strategies for their improvement. In our study, we adhere to the position that even though the considered professional competencies are interrelated and represent their holistic model, each of them has its specific development, which should be taken into account when designing professional training programs. The important conclusion of the study was, firstly, that future teachers realize the target benchmarks and the need to develop their professional competencies, secondly, the need for systemic changes in the process of professional training of teachers, thirdly, the development of a structural model of teacher's professional competencies, fourthly, the development and implementation of modern methods and tools for measuring professional competencies. The results of our study became the basis for taking some measures to monitor professional competencies aimed at improving the educational process and updating educational programs.

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Formation of Information Competence in Future Teachers based on the Integration of Artificial Intelligence Technologies in Education

Abstract

Introduction. The modern education system is undergoing a period of fundamental transformations driven by the rapid development of digital technologies and the widespread integration of artificial intelligence into educational practice. Traditional approaches to developing teachers' information competence, based on mastering basic computer skills, prove insufficient for preparing specialists to work in the context of intelligent technology development. The integration of AI technologies in education actualizes the need to reconceptualize the content and structure of teachers' information competence, incorporating new components related to understanding the principles of intelligent systems operation and skills for critically evaluating their capabilities. *Methodology and Methods.* The research is based on the analysis of theoretical works by leading domestic and foreign scholars in the field of teachers' information competence and the application of artificial intelligence in education. Methods of theoretical analysis, systematization and generalization of scientific literature, and structural-functional analysis were used to identify components of information competence in the context of AI technologies. A comparative analysis of international standards and frameworks for teachers' ICT competence was conducted. *Results.* The structure of teachers' information competence has been defined as a multi-component system including cognitive, operational-activity, and motivational-value components. The interrelationship between the level of teachers' information competence and the effectiveness of AI technology application in various aspects of professional activity has been identified: from lesson planning to creating an inclusive educational environment. It has been established that AI acts as a catalyst for the transformation of information competence, actualizing the development of new data handling skills and critical analysis of automated solutions. *Scientific Novelty.* For the first time, a comprehensive analysis of the transformation of teachers' information competence under conditions of AI technology integration in education has been conducted. A theoretical model of the interrelationship between information competence components and various applications of artificial intelligence in pedagogical activity has been developed. The necessity of developing new digital age competencies in future teachers has been substantiated. *Practical Significance.* The research results can be used in developing educational programs for teacher training, creating teacher professional development systems, and forming standards of professional competence for educators in the context of digital transformation of education.

Keywords: information competence, artificial intelligence, teacher training, digital transformation of education, AI technologies in education.

Introduction. The modern education system is experiencing a period of fundamental transformations driven by the rapid development of digital technologies and the widespread integration of artificial intelligence into educational practice (Pedro, 2019; Chen, 2020). In the context of information society formation and the transition to a knowledge economy, the problem of preparing pedagogical personnel capable of effectively functioning in the new technological reality and ensuring quality education for the younger generation becomes particularly relevant.

The digital transformation of education (Mukul, 2023) presents fundamentally new requirements for teachers' professional

competence, with information competence becoming a key element as an integrative quality that ensures the ability to effectively search, analyze, evaluate, and use information in professional activities. Traditional approaches to developing information competence, based on mastering basic computer skills, prove insufficient for preparing teachers to work in conditions of widespread use of intelligent technologies.

Artificial intelligence, as a set of machine learning technologies, natural language processing, and big data analysis, radically transforms the educational landscape, providing new opportunities for learning personalization, automation of routine processes, and enhancing the effectiveness of pedagogical activities. At the same time, the integration of AI technologies in education actualizes the need to reconceptualize the content and structure of teachers' information competence, incorporating new components related to understanding the principles of intelligent systems operation, skills for interacting with them, and critically evaluating their capabilities and limitations (Huang, 2021).

Analysis of the current state of pedagogical preparation reveals a significant gap between rapidly developing technological capabilities and future teachers' readiness for their effective use. Therefore, in the present study, we have formulated the following *research question*: "What are the essence, structure, and characteristics of developing information competence in future teachers under conditions of artificial intelligence technology integration in education?"

Materials and Methods. Teachers' information competence (Sapaev, 2022) represents an integrative professional quality characterized by a combination of knowledge, skills, abilities, and personal qualities that ensure the effective use of information and communication technologies in educational activities. It includes the ability to search, analyze, critically evaluate, and systematize information from various sources, proficiency in modern digital tools and educational platforms, as well as the ability to adapt information

resources to the specifics of the learning process and the age characteristics of students.

The problem of teachers' information competence has received fundamental theoretical and empirical development in the international research community through the works of leading foreign scholars.

The conceptual foundations of information literacy were laid by Christina S. Doyle, who conducted a large-scale study for the National Forum on Information Literacy from 1992-1994 using the Delphi method with 56 experts participating. Doyle defined information literacy as "the ability to access, evaluate, and use information from a variety of sources" and developed ten discrete attributes of an information literate person. Her work "Information Literacy in an Information Society: A Concept for the Information Age" became foundational for understanding the role of information literacy in educational reforms (Doyle, 1994).

The process approach to information seeking was developed by Carol Collier Kuhlthau, a professor at Rutgers University, who created the Information Search Process (ISP) model in the 1980s. The ISP model presents a holistic view of information seeking from the user's perspective in six stages: task initiation, selection, exploration, formulation of focus, collection, and presentation. Central to ISP is the concept that uncertainty, both affective and cognitive, increases and decreases throughout the information search process. Kuhlthau's work is among the most cited works by library and information science faculty and represents one of the conceptualizations most frequently used by information science researchers (Kuhlthau, 2010).

The Sense-Making Methodology was created by Brenda Dervin, Professor Emeritus at The Ohio State University, who has been developing the Sense-Making Methodology since 1972. Dervin studied individual sense-making, developing theories about the "cognitive gap" that individuals experience when trying to make sense of observed data. Her 1986 article "Information Needs and Uses" in the Annual Review of Information Science

and Technology is considered a foundational work and classic citation. The Sense-Making Methodology from the beginning sought to better understand communication from a more communicative (dialogical) perspective and apply this understanding to the design and implementation of formal communication efforts (Dervin, 1976).

The standardization of information literacy in higher education was accomplished by the Association of College and Research Libraries (ACRL). In 2000, ACRL developed and approved the "Information Literacy Competency Standards for Higher Education," defining information literacy as "a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." The current ACRL Framework for Information Literacy for Higher Education opens opportunities for librarians, faculty, and other institutional partners to reimagine instruction sessions, assignments, courses, and even curricula (American Library Association, 2000).

International frameworks for teachers' ICT competence were developed by UNESCO. The UNESCO ICT Competency Framework for Teachers (ICT CFT) provides a comprehensive set of competencies that teachers need to integrate ICT into their professional practice to facilitate students' achievement of learning objectives. The framework aims to create inclusive knowledge societies and considers the impact of recent technological advances on education and learning, such as artificial intelligence, mobile technologies, the Internet of Things, and open educational resources (Mtebe, 2020).

Empirical studies of teachers' information competence have been conducted in various national contexts. Taiwanese researchers developed "Information Literacy Competency Standards for Elementary and Secondary School Teachers," identifying three levels (standards, basic indicators, and secondary indicators) and three dimensions (knowledge, skills, and attitudes). Multi-level studies have shown that teachers' competence in developing students'

information literacy depends on both individual factors and school-level factors (Wen, 2008).

The problem of teachers' information competence has been investigated by a wide range of Russian scholars who have made significant contributions to the theoretical understanding and practical development of this phenomenon.

The conceptual foundations of information competence were laid by A.V. Khutorskoy (Khutorskoy, 2004), who examined information competence in the context of key competencies of the personality-oriented education paradigm. S.V. Trishina, in collaboration with A.V. Khutorskoy, developed theoretical concepts about the information competence of specialists in the system of additional professional education, defining information competence as "an integrative quality of personality that is the result of reflecting the processes of selection, assimilation, processing, transformation, and generation of information into a special type of subject-specific knowledge, allowing for the development, adoption, forecasting, and implementation of optimal solutions in various spheres of activity".

Structural-functional analysis of information competence was developed in the works of O.G. Smolyaninova, who considers information competence as "universal ways of searching, obtaining, processing, presenting and transmitting information, generalizing, systematizing and transforming information into knowledge." The researcher developed a multi-component model of information competence, including cognitive, operational, and motivational components (Smolyaninova, 2022).

The component composition of information competence was analyzed in detail in the research of E.V. Danshina, who identifies cognitive, value-motivational, and activity components of information competence, as well as V.L. Akulenko, M.G. Dzugoeva, O.B. Zaitseva, N.Yu. Tairova, O.M. Tolstykh, who consider information competence as a multi-level pedagogical category (Danshina, 2009).

The specifics of information competence in pedagogical activities were investigated by

E.V. Petrova, who defines teachers' information competence as a complex of knowledge and skills in the field of information technologies, combined with abilities to search, analyze, select, process, transmit, and store information (Petrova, 2012). The concept of "information competence of future teachers" has been explored by V.V. Vorobyeva, T.A. Gudkova, N.A. Ershova, O.B. Zaitseva, O.V. Ivanova, S.A. Pestov, V.I. Petrova, L.B. Senkevich, E.V. Sidorova, O.G. Smolyaninova, I.N. Sokolovskaya, A.A. Temerbekova, O.M. Tolstykh, F.Kh. Khabibullin, and others (Ilyasova, 2016).

Psychological aspects of information competence were developed by O.S. Grebenyuk within the framework of the concept of human individuality, which allowed examining information competence through the lens of personality's mental capabilities and identifying internal factors of its development (Grebenyuk, 2000).

Results. The collective research of these authors formed a comprehensive scientific foundation for understanding the phenomenon of teachers' information competence as an integrative professional quality, including cognitive, operational-activity, and motivational-value components, necessary for effective functioning in the modern information-educational environment.

The structure of teachers' information competence (Berkimbaev, 2012) represents a multi-component system including three interconnected elements, each characterized by specific content and functional orientation (Table 1).

Table 1. *Components of teachers' information competence*

Cognitive Component	forms the theoretical-methodological foundation of professional activity in the digital educational environment. The content of the cognitive component includes systematized knowledge about the patterns of education informatization processes, understanding of the conceptual foundations of digital didactics, and mastery of terminological apparatus in the field of educational technologies. Teachers must possess knowledge about the psychological and pedagogical characteristics of information perception and processing by students in the digital environment, understand the principles of interactivity and multimedia in learning, and be aware of the didactic possibilities of various types of digital educational resources. The cognitive component presupposes knowledge of the regulatory and legal foundations for using information technologies in education, including issues of information security, personal data protection, and copyright compliance when working with digital content.
Operational-Activity Component	represents a set of practical skills and abilities that ensure effective application of information and communication technologies in pedagogical practice. The operational-activity component encompasses teachers' technical literacy, including confident mastery of basic software, operating systems, and office applications. Teachers must demonstrate skills in creating, editing, and managing digital educational content, including presentations, interactive assignments, multimedia materials, and online tests. The operational-activity sphere presupposes the ability to work with educational platforms and learning management systems, conduct searches and critical evaluation of educational resources on the internet, and integrate various digital tools into a unified methodological system. An important component of the operational-activity block is the ability to provide technical support to students when using digital technologies and solve emerging technical problems in the educational process.
Motivational-Value Component	reflects teachers' internal readiness for professional development in the field of information technologies and awareness of their significance for improving education quality. The motivational-value component is characterized by sustained motivation for mastering new digital tools and teaching methods, striving for innovative pedagogical activity, and readiness for continuous self-education in the rapidly developing field of educational technologies. The motivational-value

sphere includes awareness of the pedagogical potential of information technologies for individualizing learning, increasing student motivation, and developing their key 21st-century competencies. Teachers must demonstrate readiness to overcome technophobia, a critical attitude toward traditional teaching methods when they are ineffective in the digital environment, and the ability to reflect on their own professional activity in the context of using information technologies. The motivational-value block presupposes the formation of a value-based attitude toward continuous professional development and recognition of the need to adapt pedagogical practice to the requirements of digital society.

Artificial intelligence in modern teachers' work (Jamal, 2023) represents a complex of technological solutions based on machine learning algorithms and natural language processing that automate and optimize various aspects of pedagogical activity. The effective use of these capabilities directly depends on the level of teachers' information competence and simultaneously contributes to its development (Table 2).

Table 2. *Interrelationship between teachers' information competence and AI application in education*

AI in Education	What is required from the teacher	The role of information competence
Lesson Planning and Preparation Using AI	Intelligent systems generate lesson plans and didactic materials, but teachers must be able to select quality sources, verify proposed content, and adapt materials to the specifics of their class.	Information competence manifests in the need for developed skills in formulating precise information queries and critically evaluating the results proposed by the system, actualizing such components as the ability to critically analyze information and integrate various data sources.
Personalization of Learning	Teachers must understand the principles of data collection and analysis, be able to identify patterns in information about student progress, and transform statistical indicators into specific methodological decisions.	Information competence manifests in the ability to work with large volumes of structured information and make informed decisions based on it.
Assessment Automation	Teachers must possess information competence for critically evaluating the quality of automatic analysis of student work, identifying potential system errors, and supplementing machine analysis with professional expertise.	Information competence manifests in the ability to understand algorithmic principles and skill in comparing automated results with personal observations to ensure assessment accuracy.
Monitoring Student Progress through AI Dashboards	Actualizes the need for developing visual information literacy and statistical analysis skills. Teachers must be able to interpret graphs, charts, and other forms of data visualization, identify trends and anomalies in information about class progress.	Information competence manifests in the ability to transform visual information into pedagogical insights and actionable student support strategies.
Administrative Tasks Automated with AI	Require teachers to develop skills in working with digital information systems and understanding the principles of digital document management.	Information competence manifests in the need to possess technical skills for effective interaction with AI assistants, as well as information literacy to ensure the security and confidentiality of processed data.

Methodological Support through AI Recommenda-tions	Teachers must be able to analyze methodological solutions proposed by the system, compare them with their own pedagogical experience and scientific data, and adapt general recommendations to the specifics of a particular educational context.	Information competence manifests in the ability to critically evaluate and integrate various sources of methodological information for making informed pedagogical decisions.
Working with Parents with AI Support	Teachers must be able to interpret automatically generated reports, supplement them with qualitative observations, and present information about the child's progress in a form accessible to parents.	Requires a high level of information competence in the area of communication, including the ability to adapt technical information for various target audiences.
Professional Development Using AI Recommenda-tions	Contributes to the formation of self-directed information search skills and continuous learning. Teachers must critically evaluate development programs proposed by the system, independently search for additional sources of professional information, and integrate various forms of professional knowledge.	Information competence is expressed in the ability for independent information search, critical evaluation of sources, and synthesis of knowledge from various fields for continuous professional development.
Creating an Inclusive Environment with AI Tools	Requires teachers to understand the principles of adapting information for various categories of students and the ability to work with diverse formats of data presentation.	Information competence manifests in the ability to select optimal ways of presenting information for each student and adapt AI-generated materials to individual needs.

Thus, the integration of artificial intelligence into pedagogical activities not only requires a high level of information competence from teachers but also creates new opportunities for its development. AI acts as a catalyst for the transformation of teachers' information competence, actualizing the need to develop new skills in working with data, critical analysis of automated solutions, and effective interaction with intelligent systems. Modern teachers' information competence is formed in a symbiosis of traditional information skills and new competencies of the digital age, where human expertise is complemented by artificial intelligence capabilities.

Key artificial intelligence technologies in education (Chen, 2020) represent a complex of interconnected technological solutions based on machine learning methods, natural language processing, and big data analysis, which transform traditional approaches to organizing the educational process (Table 3).

Table 3. *Artificial Intelligence Technologies in Education*

Adaptive Learning	represents a technology for personalizing the educational process based on machine learning algorithms that analyze individual characteristics of each student's learning activity and dynamically adjust content, pace, and teaching methods. The technology uses collaborative filtering algorithms and recommender systems to create individual educational pathways that take into account cognitive abilities, learning style, prior knowledge, and current student progress. Adaptive systems continuously collect data on student interaction with educational content, analyze patterns of errors and successes, and then automatically modify task complexity, provide additional explanations, or suggest alternative ways of studying the material.
Educational Data Mining	represents an interdisciplinary field that combines methods of statistical analysis, machine learning, and data visualization to extract meaningful patterns from large

	arrays of information about the educational process. This technology includes predictive analytics for forecasting academic performance and dropout risk, cluster analysis for identifying groups of students with similar characteristics, sequence analysis for understanding learning strategies, as well as sentiment analysis for assessing students' emotional states. Learning analytics technologies allow for identifying hidden patterns in student behavior, optimizing curricula, and providing evidence-based recommendations for improving educational outcomes.
Intelligent Chatbots and Virtual Assistants	represent convergent technologies that combine natural language processing, dialogue systems, and knowledge bases to provide automated support for students and educators. Modern educational chatbots use transformer neural network architectures and large language models to understand query context, generate relevant responses, and maintain multi-step dialogues. They are capable of providing instant answers to frequently asked questions, directing students to appropriate resources, explaining complex concepts through interactive dialogue, and collecting feedback for further improvement of the educational process.
Automated Assessment Systems	are based on computer vision technologies, natural language processing, and semantic analysis to automate the processes of checking and evaluating various types of academic work. For assessing written assignments, text analysis algorithms are used, including grammar checking, stylistics, logical structure, and compliance with assessment criteria. Automated code assessment systems apply static and dynamic analysis to check correctness, efficiency, and programming style. Computer vision technologies enable automatic evaluation of graphic works, diagrams, and handwritten mathematical calculations.
Speech Recognition and Synthesis Technologies	are integrated into educational systems to provide multimodal interaction and support inclusive education. Automatic Speech Recognition (ASR) is used for transcribing lectures, creating real-time subtitles, and analyzing students' oral responses. Text-to-Speech (TTS) technologies provide audio rendering of textual materials, which is particularly important for students with visual impairments or dyslexia. Modern systems are capable of analyzing prosodic characteristics of speech to assess emotional state and level of student engagement.
Image and Video Analysis Technologies for Monitoring the Educational Process and Creating Interactive Learning Environments	classroom behavior analysis systems use eye-tracking technologies, emotion recognition, and gesture analysis to assess students' attention levels and engagement. Augmented Reality (AR) and Virtual Reality (VR) create immersive educational environments that allow students to interact with three-dimensional models of complex objects and processes.
Recommender Systems in Education	adapt collaborative and content-based filtering methods to provide personalized recommendations for learning materials, courses, and activities. These systems analyze student profiles, their preferences, activity history, and learning outcomes to suggest optimal educational resources. Hybrid recommender systems combine various approaches to improve the accuracy and diversity of recommendations.

The integration of all the listed technologies creates an intelligent education ecosystem where various AI components interact to provide comprehensive support for the educational process, requiring an interdisciplinary approach that combines achievements from computer science, pedagogy, psychology, and cognitive sciences to create effective and ethically sound educational solutions.

Discussion. The integration of artificial intelligence into pedagogical preparation represents one of the most relevant and debatable topics in contemporary pedagogical education (Chen, 2020; Pedro, 2019), generating

active debates among researchers, practicing educators, and educational technology developers, touching upon fundamental aspects of future teachers' professional preparation and requiring comprehensive analysis of various perspectives.

Proponents of active implementation of AI technologies in pedagogical preparation (Jamal, 2023) present compelling arguments in favor of digital transformation of the educational process. They argue that modeling pedagogical situations using artificial intelligence creates unprecedented opportunities for safe practice for future educators, allowing students to experiment with various methodological approaches without the risk of negative impact on real students. Intelligent systems are capable of generating diverse scenarios of pedagogical interactions, modeling behavior of students with different educational needs, and providing immediate feedback on decisions made. Proponents pay special attention to personalization of educational pathways (Mukul, 2023), asserting that AI systems can analyze individual needs, learning styles, and professional deficits of each student, automatically adjusting curricula and suggesting additional resources for problem areas.

Automated feedback in performing practical assignments is viewed by proponents as a revolutionary achievement (Wen, 2008), capable of fundamentally changing the quality of professional preparation. AI systems for analyzing pedagogical activity can evaluate the quality of developed lesson plans, analyze video recordings of conducted classes, and provide detailed recommendations for improving methodological approaches. Virtual mentors and tutors based on AI technologies provide round-the-clock support for students in the process of mastering pedagogical disciplines, which is particularly effective for correspondence and distance learning forms, compensating for limited contact with instructors.

However, not all specialists share the enthusiasm for total digitization of pedagogical preparation. Critics express (Edwards, 2018) serious concerns about potential negative consequences of excessive dependence on technological solutions. The main criticism concerns the risk of reduced development of critical thinking and creative abilities in future educators, as well as the loss of important interpersonal interaction skills. Opponents of active AI integration argue that automation of many processes may lead to the formation of "technologically dependent" educators, incapable of independent decision-making in non-standard situations. Representatives of the traditional pedagogical school emphasize that pedagogy is primarily the art of human interaction, and no algorithms can replace live communication between teacher and student.

Serious concern in the scientific community is raised by the problem of algorithmic bias in AI systems (Berkimbaev, 2012), which may exacerbate existing inequalities in education and lead to discrimination against certain groups of students. Issues of privacy and data security become critically important when processing personal information about students and their academic achievements, especially in the context of modern requirements for personal data protection. Technological unpreparedness of educational institutions and faculty for implementing AI solutions may create digital inequality and reduce the quality of preparation in less equipped institutions.

Financial limitations also become a subject of heated discussions (Khanzode, 2020). High costs for developing, implementing, and maintaining AI systems may become a barrier to widespread technology adoption, especially in developing countries and regions with limited resources, creating a risk of deepening educational inequality at the global level, where access to quality pedagogical preparation will be determined by the economic capabilities of the region or institution.

Ethical dilemmas of using AI in pedagogical preparation include questions of future educators' autonomy in making professional decisions, transparency of assessment algorithms, and risks of dehumanizing the educational process. Opponents of excessive technologization argue that pedagogical education should maintain its humanistic orientation, and artificial intelligence can only supplement, but not

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replace, human relationships in the educational process. The need to maintain balance between technological efficiency and human values requires the development of clear ethical frameworks for using AI technologies in pedagogical education.

In the course of academic discussions, voices increasingly call for finding a reasonable compromise between technological capabilities and traditional pedagogical values. Many researchers agree that successful integration of artificial intelligence requires a systematic approach (Thomas, 2025), including the development of appropriate curricula, faculty preparation, creation of technological infrastructure, and formation of ethical standards for using AI technologies. Only with a thoughtful implementation strategy and constant monitoring of results can artificial intelligence become an effective tool for improving the quality of pedagogical personnel preparation for the digital future of education, presupposing gradual implementation of AI technologies with constant assessment of their impact on the formation of professional competencies and adjustment of strategies depending on the experience gained, which allows utilizing the advantages of artificial intelligence while minimizing associated risks.

Conclusion. The conducted research allows us to conclude that the transformation of teachers' information competence under conditions of artificial intelligence integration into education represents a natural evolutionary process, reflecting the adaptation of the pedagogical profession to the challenges of the digital age. The multi-component structure of information competence identified through analysis, including cognitive, operational-activity, and motivational-value components, demonstrates a qualitative increase in the complexity of professional requirements for modern teachers. The established interrelationships between the level of information competence and the effectiveness of AI technology application in pedagogical activities indicate the formation of a new type of professionalism based on the symbiosis of human expertise and intelligent systems capabilities.

The prospects for developing this research direction are connected with the need to develop diagnostic tools for assessing the level of teachers' information competence formation in the context of AI technologies, as well as creating methodological recommendations for integrating corresponding modules into pedagogical education programs. The further study of ethical aspects of using artificial intelligence in education and the development of mechanisms for ensuring balance between technological efficiency and humanistic values of pedagogy appears critically important. The research results actualize the need for interdisciplinary collaboration among specialists in pedagogy, psychology, information technologies, and ethics to create a comprehensive concept for preparing pedagogical personnel for professional activity under conditions of widespread adoption of intelligent educational technologies.

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Development of Professional Potential of University Teachers Based on HRM Practices

Abstract

Introduction. The higher education system in the modern world faces the challenge of developing highly professional teaching staff capable of preparing competent HR specialists for the labor market. University teachers must demonstrate exceptional professionalism and continuously develop their capabilities to meet contemporary educational demands. The emphasis on developing professional potential of university teachers based on human resource management practices has become increasingly critical for educational quality and institutional effectiveness. *Methodology and Methods*. This study employs a comprehensive analysis of professional potential development frameworks and HRM practices in higher education. The research examines the structural components of professional potential, including professional competence, innovative readiness, and social, cultural, and moral potential. The methodology is grounded in the hypothesis that professional potential represents a manifestation of human potential within labor relations context. *Results*. The analysis reveals that professional potential serves as a fundamental condition for effective teaching activity and acts as a general indicator of professional competence and self-improvement. Professional competence emerges as a result of professional education, characterized by high-level professional self-awareness, holistic pedagogical vision, and systematic development of abilities for sociocultural self-determination and creative self-realization. The findings demonstrate that professional competence represents an effective category encompassing knowledge management, skill development, personal experience integration, and consequent professional potential enhancement. *Scientific Novelty*. This research provides a comprehensive framework for understanding professional potential as an interconnected system of competencies specifically tailored to university teaching contexts. The study introduces innovative approaches to integrating HRM practices into academic professional development. *Practical Significance*. The findings offer practical guidelines for higher education institutions to systematically develop teacher professional potential, ultimately improving educational quality and preparing students for successful professional careers in HR and related fields.

Keywords: potential, professional potential, professionalism, management, resources, human resources, human resource management, personnel management.

Introduction. Transformational processes of a sociocultural and socio-economic nature within contemporary social reality exert cardinal influence upon strategies and approaches to the professional preparation of educational practitioners. The human resource management system constitutes a multi-tiered organisational construct, comprising interconnected components that form a coherent architecture, subject to systematisation according to multiple criterial foundations.

Understanding the importance of this process's effectiveness enables HR specialists to modify and improve it at various levels (Waseem, 2013). Effective human resource management requires (Runhaar, 2017) comprehension of the efficient employee management process. Since the management object in this process is human, it possesses highly complex and specialized characteristics. The primary objective of our research article is to identify the distinctive features of developing the professional potential of university teachers based on HRM practices (Permatasari, 2023).

President K.Zh. Tokayev, in his article "Independence is Above All", emphasizes

that "the 21st century is the era of knowledge and skills. Every individual can enhance their competitiveness only through continuous self-improvement, mastering new professions, and constantly adapting to the flow of time. Knowledge, technology, and high labor productivity should become the main driving forces of national development" (Tokayev, 2021).

Within the context of implementing the aforementioned strategic objectives, the Kazakhstani educational system has undergone paradigmatic transformation. Under conditions of globalisation processes and intensification of competitive environments within the educational sphere, paramount significance is attributed not only to enhancing the qualitative characteristics of educational services, but also to developing the professional potential of academic personnel within higher educational institutions as key agents of educational activity.

Scientific investigations by domestic and international researchers (L.K. Kaidarova, Z.A. Arynova, Z.K. Smagulov, M. Mescon, I.A. Dokukina and A.V. Polyanin, Yu.N. Lobas and E.A. Eresko) concentrate upon the problematic of strategic human resource management and analysis of human capital development issues.

The problematic of individual potential development has received comprehensive examination in the works of Russian scholars (G.S. Altshuller, L.S. Vygotsky, V.V. Davydov, A.Yu. Kozyreva, I.S. Kon, B.M. Teplov, V.I. Maksakova and others) and international researchers (F. Barron, E. de Bono, J.P. Guilford, F. Jackson, R. Sternberg, K. Taylor).

From an etymological perspective, the term "potential" denotes latent capabilities or concealed force. Within the framework of comprehensive understanding, this concept encompasses the totality of sources of possibilities, resources and reserves available for realisation, resolution of problematic situations, or achievement of established objectives, representing the potential capabilities of an individual, community, or nation within a particular subject domain.

B.G. Ananiev formulates general psychological foundations for the conceptualisation of "individual potential," asserting the necessity of studying "systems of knowledge concerning reserves and resources of human development, processes of self-development and possibilities for self-improvement" (Ananiev, 2001).

D.A. Leontiev incorporates the following components into the content of the "personal potential" concept: individual autonomy and independence, internal freedom; meaningfulness of life; resilience in difficult situations; readiness for internal changes; ability to perceive new unknown information; constant readiness for action; characteristics of activity planning; and individual temporal perspective (Leontev, 2006).

The content and structure of individual subjective potential have been actively researched in domestic psychology (B.G. Ananiev, L.I. Antsyferova, T.I. Artemyeva, I.V. Bayer, E.V. Dyachkova, V.P. Ivanova, V.N. Markov, A.S. Ognev, V.A. Petrovsky, V.G. Sukhodolsky, E.P. Khodaeva, and others).

However, this concept remains incompletely defined: the model of subjective potential, principles and approaches for developing its components, and the nature of their interrelation and interdependence have not been fully established.

Several scholars (M.A. Larionov, A.A. Muravyeva, O.N. Oleynikova) term this dual nature of the teacher's role "multi-professionalism", which consists of the ability to simultaneously implement specific pedagogical, research, scientific-pedagogical, and methodological types of professional activity, ensuring their execution through mutual complementarity.

The term "potential", when translated from Latin, signifies latent possibilities and power. It is simultaneously considered as a source of reserves, resources, opportunities, and abilities applied in solving certain tasks and problems or achieving specific objectives. L.I. Romankova interprets the concept of "higher education system potential" through the unity of three levels: past, present, and future. She examines personnel potential from various perspectives: first, as a set of qualities accumulated by the subjects of educational activity that determine

their capacity for functioning and development; second, as the practical application of existing abilities; third, as the acquisition of new abilities by educational activity participants. Focusing on the third position, the author concludes that one direction of studying university personnel potential is describing and evaluating the university's corporate culture (Romankova, 2002).

The issue of developing the professional potential of university teachers is closely linked to the problem of individual human potential and its inherent resources. Numerous researchers (V.A. Bodrov, E.M. Borisova, A.A. Derkach, E.F. Zeer, K.K. Platonov, A.A. Rean, G.V. Sukhodolsky, D. Shadrikov, and others) conclude that personal potential plays a crucial role in developing professional mastery, and the concept of "professionalism" can only be expanded within the framework of productive professional activity.

D. Merzadinova, by examining scholarly contributions from both international researchers (J. Beardwell, A. Thompson, J. Bratton, J. Gold, M. Biron, E. Farndale, J. Paauwe) and Soviet experts (A.N. Tulembaeva, Yu.A. Melikov, P.A. Maluev, A.Yu. Kibanov, O. Elizarova), investigates their conceptualizations, viewpoints, and approaches concerning human resource management significance. The author contends that "presently, human capital constitutes a precious organizational asset and an essential instrument for attaining prosperity. Therefore, optimal institutional functioning demands comprehensive grasp of personnel management principles in establishing effective workforce administration systems. Regrettably, notwithstanding substantial investigation in this domain, significant scholarly disagreements persist regarding the conceptualization of human resource management and its distinctive features. This situation, consequently, empowers organizational leadership to implement personnel management efficiently and broadens the application possibilities of this function within business enterprises" (Merzadinova, 2017).

In CIS countries and Kazakhstan, notable works by scholars in personnel and human resource management include those by L.A. Beresheva, A.P. Erofeeva, E.N. Elistratova, A.I. Selina, T.D. Sinyavets, A.P. Maksimov, I.S. Tomilov, and others. The theoretical foundations of personnel management have been established in works by renowned foreign and domestic authors: L. Hall, S. Taylor, C. Atkinson, V.M. Maslov, M.I. Bukhalkov, A.Ya. Kibanov, A.N. Silin, and others. The issue of professional, systematic preparation of students for personnel management, human resources, and capital in universities is addressed in works by researchers (Yu.N. Arsenyev, V.A. Shcherbakova, I.V. Blauberg, I.V. Zorina, T.A. Ilyina, T.S. Panin, and others).

Management, being a complex and multi-faceted process that involves maintaining certain structural frameworks and specific regimes, represents a particular type of activity that determines success or failure in achieving specific objectives. Simultaneously, management is considered a purposeful activity that enables the fulfillment of specific functions (Vershigora, 2001).

A resource constitutes an instrument, supply/repository, or capacities of something; within educational contexts, a resource may encompass both the outputs generated by an individual and the individual themselves as an outcome of learning processes and professional development (Kondakov, 2005).

Human resources encompass "everything a person can offer" – their potential, physical, mental, and intellectual capabilities, experience and professional skills, as well as all knowledge and competencies they possess. The characteristics of human resource formation vary according to the type of activity (Kafidov, 2012).

The concept of "personnel potential" is defined as the complete quantitative composition of an enterprise's permanent employees who possess the necessary professional training and qualifications, personal qualities and characteristics for participation in the production process. This concept is closely related to the notion of "potential" (Voronina, 2021).

Personnel potential represents the abilities and skills of employees that can be utilized by

an organization to achieve social outcomes and enhance efficiency across various activities. Generally, personnel potential is understood as the ability or capability of existing personnel within a management object to perform their functions.

Analysis of contemporary literature enables the identification of the following tasks related to developing higher education institution personnel potential:

- staff recruitment: examining employment market data, computing workforce needs, establishing competency requirements for position profiles, merit-based staff selection;

- worker assessment: evaluating employees' work capabilities, staff certification; personnel integration: acclimating new professionals, guidance and advisory services, human capital advancement; workforce education: strategizing personnel growth, vocational preparation, competency development, occupational retraining;

- examining work-life quality standards, establishing satisfaction levels of essential individual requirements through institutional practices, enhancing workplace environments, recognizing and addressing collective morale and psychological atmosphere; stimulating and rewarding staff performance;

- ensuring organizational social development: studying causes of social tension, developing and coordinating social programs, organizing medical assistance.

These tasks can be integrated into functional blocks of the university's personnel management system and together form a complex hierarchically organized system.

Currently, the level of human potential development allows for the identification of a special direction in personnel management related to knowledge management. The theoretical foundation of knowledge management consists of cognitive management methods, and this direction encompasses ethical and psychological issues.

Materials and Methods. Presently, investigation into the occupational capabilities of academic faculty through HRM methodologies constitutes a pressing matter demanding

exploration from novel theoretical and practical standpoints within the framework of competency-oriented approaches.

The theoretical and methodological foundations of the research are comprised of: the personality-oriented foundation for developing the professional potential of university teachers (E.V. Bondarevskaya, V.V. Serikov, A.V. Khutorskoy, I.S. Yakimanskaya, and others); synergetic principles of educational process organization (A.F. Losev, I.N. Maltseva, L.I. Novikova, and others); culturally-oriented education theory (V.S. Bibler, S.I. Gessen, M.S. Kagan); personality-oriented education theory (E.V. Bondarevskaya, V.V. Davydov, L.V. Zankov, V.V. Serikov, and others); creative potential of personality in continuous education (V.A. Slastenin, N.D. Khmel); professional development of educators (N.V. Kuzmina, V.D. Shadrikov, A.K. Markova).

Following the systems methodology and grounded in the humanistic educational framework, the systemic attributes comprising the architecture of subjective capacity as a self-regulating mechanism encompass: comprehensive personality expressions that anticipate an engaged stance as "unified activity"; the individual's axiological-semantic chronological outlook; reflective ability (serving as a prerequisite for behavioral management through cognition, comprehension, and anticipation of action results); accountability as the structuring, governance, and supervision of conduct; aptitude for self-actualization and autonomous positioning within existence.

During the study of the genesis of the concept "teacher's professional potential", definitions of the concepts "pedagogical potential", "teacher's pedagogical potential", and "teacher's professional potential" are clarified:

- enhancement of professional qualities of the pedagogical collective (A.S. Belkin, E.F. Zeer, E.A. Klimov, E.V. Korotaeva, N.V. Kuzmina, A.K. Markova, L.M. Mitina, and others);

- development of personality potential (V.G. Aseev, A.A. Derkach, E.V. Kolesnikova, V.N. Markov, V.N. Myasishchev, B.D. Parygin, V.I. Slobodchikov, V.A. Spivak, and others);

"Educational capacity" is regarded as a multifaceted integrated notion, commonly conceptualized as the convergence of distinct traits, attributes, and competencies of personality that guarantee the efficacy of instructional work. Within this context, educational capacity connects to individual human capability, and its comprehension is not singular in nature.

Notwithstanding initial semantic resemblance, the notions "instructor's personal capability" and "educational capacity" cannot be deemed equivalent. While the instructor's personal capability remains wholly a psychological framework, the notion of "educational capacity" is predominantly analyzed from a scholarly-educational standpoint, for instance: educational capacity of culture (I.E. Devyatova), educational capacity of culture (O.M. Pozdnyakova and colleagues), educational capacity of mass communication (L.A. Shestakova and colleagues), educational capacity of children's recreational periods (A.V. Nikolaev and colleagues), educational capacity of institutional corporate culture (N.V. Martishina and colleagues), educational capacity of tertiary institutions (N.G. Zakirevskaya and colleagues), instructor's educational capacity (A.M. Bodnar).

The polysemy of the terminological phrase "educational potential" determines its wide application as a foundation for forming specialized conceptual constructions derived from this basic concept. The semantic variability of the initial concept contributes to the emergence of specifying terminological units, each of which inherits the conceptual characteristics of the base term while simultaneously acquiring specific semantic nuances depending on the context of application. As a result of such terminological derivation, the concepts of "professional educational potential", "professional-educational potential of an instructor", and "professional potential of an instructor" are formed, each possessing its own conceptual content and sphere of application in pedagogical discourse.

The concept of "professional educational potential", developing the basic category of "educational potential", represents an integrative characteristic of the professional education system, encompassing a totality of material, intellectual, methodological, and organizational resources aimed at forming professional competencies in learners. This concept encompasses the potential capabilities of the educational environment in the context of professional training of specialists, including the quality of educational programs, the level of material and technical provision, the qualifications of the teaching staff, and the effectiveness of applied pedagogical technologies. Professional educational potential serves as a system-forming factor that determines the ability of an educational organization to achieve the goals of professional training and to form the knowledge, skills, and abilities necessary for professional activity in graduates.

The terminological construction "professional-educational potential of an instructor", also tracing back to the initial concept of "educational potential", characterizes the individual capabilities of a specific pedagogical subject in the field of professionally-oriented instruction. This concept integrates both the professional competencies of the instructor in the subject area and their pedagogical abilities, methodological preparedness, and readiness for innovative educational activity. The professional-educational potential of an instructor includes the totality of their theoretical knowledge, practical skills, personal qualities, and motivational orientations, which collectively determine the effectiveness of the process of professional experience transmission and the formation of necessary competencies in learners. A distinctive feature of this concept is its emphasis on the dual nature of the instructor's activity, who simultaneously acts as a bearer of professional experience and as a subject of the educational process.

The concept of "professional potential of an instructor", genetically connected to the basic category of "educational potential", focuses primarily on the professional characteristics of the specialist, their expertise in the subject area, and their capacity for professional development. This terminological unit implies a totality of professional knowledge, skills,

practical activity experience, as well as potential opportunities for professional growth and improvement. The professional potential of an instructor is determined by the level of their qualifications, the depth of their mastery of professional technologies, their ability to solve complex practical tasks, and their readiness to adapt to changing conditions of the professional environment. Unlike the previous concepts, this category places less emphasis on the pedagogical aspects of activity, concentrating on the professional component of the specialist's competence.

Thus, the examined terminological constructions, derived from the basic concept of "educational potential", demonstrate various aspects of the conceptualization of this category: from the systemic level of professional education through individual characteristics of the teacher-professional to highly specialized professional qualities of the instructor. This evidences the richness of the semantic field of the initial concept and its capacity for terminological differentiation depending on the context of scientific research (Katerbarg, 2013; I.V. Vasyutenkova; Khaydakin, 2012).

Results and Discussion. The instructor's perspective toward vocational activity suggests that while capabilities may be present, they are inadequate for successful execution of vocational responsibilities. It is comprehended as the possibility of conducting one's work at the standard of expectations established for the teaching vocation, merging comprehension of the pedagogical process essence with individual understanding of instructional and educational activity approach. The instructor's occupational capacity represents a consolidation of acquired attributes, namely, a framework of knowledge, abilities, competencies, cognitive and operational methods obtained during the preparation phase. In characterizing the occupational capacity of university faculty, the notion of "educational expertise", which is semantically related in substance, is likewise examined.

Educational expertise constitutes the capability to examine the progression of instructional processes, anticipate their organization and execution, and maintain the ability to

proactively address challenges that may emerge subsequently. In alternative terms, expertise represents the capacity to reason and function in a professional manner.

The issue of professional mastery or professionalism is examined by scholars (E.A. Klimov, N.V. Kuzmina, A.K. Markova, L.M. Mitina, F.S. Ismagilova, V.G. Gorchakova, and others).

The term "professionalism" denotes a subject's special quality for systematic, effective, and reliable performance of complex activities in various situations. The fundamental component of human professionalism is professional competence.

Professional competence is a qualitative characteristic of a specialist's personality that encompasses a system of scientific-theoretical knowledge and is related to the ability and readiness to apply knowledge and experience to solve problems in social and professional spheres. Professional competence is understood as a person's ability to effectively implement knowledge and skills acquired in a specific field in practice (Masalova, 2015).

Professional competence gradually transforms into professional mastery, which represents high-level expertise, characterizes deep mastery of the profession, and is manifested in the creative application of information acquired during the learning process. Reflection is defined as a system-forming factor of professionalism that helps overcome stereotypes of professional-personal experience and address problematic situations arising in the process of solving professional-pedagogical tasks.

The subjective and occupational capacity of an educator's personality is consolidated in their evolving professional capabilities or competencies for practically executing individualized pathways and schemes of personal and vocational self-advancement within the instructional process of tertiary institutions; implementing required modifications; performing autonomous examination of academic, vocational, and existential accomplishments; self-enhancement; and reinforcing the function of professional and discipline-specific competencies.

The process of self-actualization of subjective professional potential is understood as the transformation of the subject's potential qualities into actual ones. The success and methods of updating the future teacher's subjective-professional potential are continuously connected with the activity being formed in all spheres of life, including educational-professional, reflective, value-semantic temporal perspective, as well as professional-personal perspective as responsibility that regulates and organizes the teacher's behavior.

The content of the educator's subjective-professional potential is legitimately linked with the professional specialist's "subjective competencies" and general professional competence and professional mastery – readiness for productive work and the ability to solve various professional-pedagogical tasks.

Within the framework of the competency-based approach, professional competence constitutes an external manifestation of the internal subjective-professional potential of the individual. The subjective-professional potential of an educator is constituted as a holistic integrative formation, representing a synthesis of professional and subjective competencies. This formation encompasses reflexive capabilities, professional responsibility, and value-semantic temporal perspective, which correspond in their substantive content to the specificity of pedagogical activity. The formation of this potential occurs through the active engagement of the individual as a subject of educational-professional practice, wherein professional knowledge and skills become integrated with the personal characteristics and subjective orientations of the educator. Thus, subjective-professional potential serves as the internal foundation of professional competence, determining the quality and efficacy of pedagogical activity through the lens of personal-professional development of the specialist.

The revelation of individual potential most often occurs in the process of professional development, which includes: choosing a profession considering one's capabilities and abilities; mastering professional rules and norms; forming and recognizing oneself as a future specialist, enriching future professional experience through thinking, developing personality through professional tools, and so forth. Personal growth is manifested biologically in striving to become as competent as possible, and this growth is believed to strengthen the organism and the "Self." The personal growth of an educator specialist presupposes continuous search for the meaning of realizing personal potential as a condition for achieving professionalism.

The substance of the notion "occupational capacity" is directly connected to, yet not synonymous with, the notion "human capacity". Presently, sociology lacks studies that attain the degree of generalization in characterizing the "human capacity" category devoted to occupational capacity.

Formulating the substance and standards for assessing occupational capacity constitutes a novel research goal. Human resources represent an autonomous management entity that necessitates establishing and addressing management objectives for its formation, accumulation, utilization, and advancement.

The transformation of higher education towards an innovative educational model generates qualitatively new professional challenges for the academic community within universities. These challenges centre upon the individualisation of educational trajectories and encompass the activation of creative initiatives in the pedagogical sphere, the diversification of educational programmes, the modernisation of technological provision for the learning process, the strengthening of interdisciplinary connections and integrative processes, alignment with the demands of the intellectual labour market, adaptation to competitive educational environments, and the enhancement of professional engagement within the academic staff.

Within the context of human resource management in educational organisations, a comprehensive intra-organisational system emerges, incorporating interconnected areas of activity. Human resource planning encompasses the optimal utilisation of the organisation's intellectual and creative capital with prospects for

its strategic enhancement, ensuring quantitative and qualitative alignment of personnel with the objectives of internal systemic development. Human resource administration is oriented towards creating optimal organisational conditions for the maximum realisation of employees' intellectual, professional, creative, and managerial potential in the process of achieving institutional objectives. Human resource development focuses upon the systematic enhancement of personnel's professional competence in accordance with the strategic priorities of organisational development.

According to E.V. Maslov, capacity characterizes the resources deployed to attain a particular objective or address a specific challenge. Concurrently, work capacity quantitatively and qualitatively signifies the resource capabilities within the employment domain held by the administrative entity during a designated timeframe (Maslov, 2012).

The working capacity of an academic represents an integrative unity of personal competencies within the academic community, combining qualitative and quantitative parameters of professional activity. This category determines the extent of participation in research, educational-methodological, and extracurricular activities, ensuring continuous improvement of work processes in accordance with educational standards, learners' requirements, and the strategic objectives of the higher education institution.

The realisation of university academics' potential is determined by a complex of personal-professional characteristics. Institutional loyalty manifests itself in positive identification with the educational institution and aspiration towards long-term professional collaboration. Organisational commitment is expressed through profound understanding of the university's mission, aims, and objectives, alongside readiness for their implementation. Professional engagement is characterised by active participation of academics in university life and an initiative-driven approach to resolving institutional challenges. The assessment of potential necessitates comprehensive examination of its multi-component structure, encompassing socio-demographic characteristics, qualification levels, motivational orientations, innovative readiness, and additional professional-personal parameters that determine the efficacy of academic activity.

An electronic survey was implemented to ascertain and assess the work capacity of the instructional personnel at tertiary institutions. The university's academic members took part in this survey.

Taking into account the qualitative and quantitative attributes of the surveyed educators, which permit us to discuss the representativeness of disproportionate sampling, among the participants, 60.2% were women and 39.8% were men. This aligns with the personnel composition of tertiary institutions, where gender disparity is evident in the university teaching personnel structure: 57% women and 43% men (Figure 1).
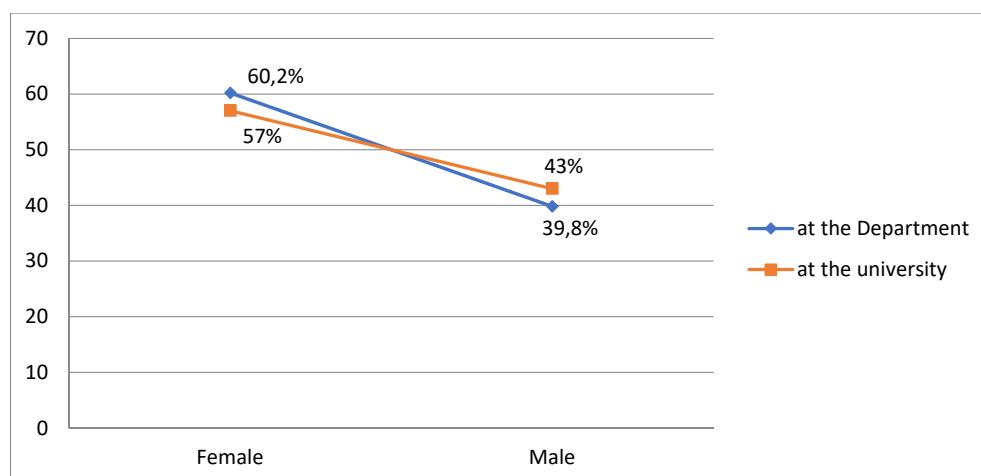

Figure 1: Data on the gender of experiment participants

The age structure of the teachers who participated in the survey was as follows: 41% were in the 31-40 age range, 29.3% were in the 41-50 age range, 10.7% were in the 22-30 age range, 10% were in the 51-60 age range, and 9% were over 61 years old (Figure 2).
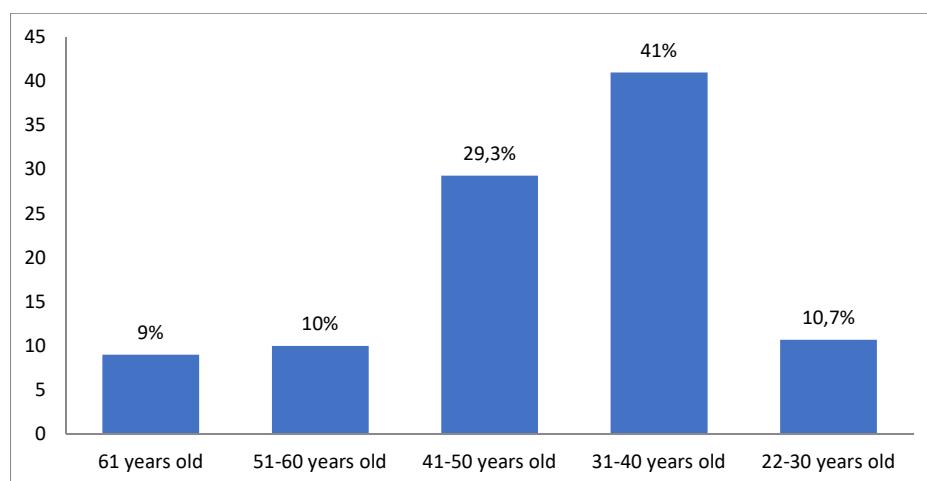
Figure 2: Age characteristics of experiment participants

Statistical information suggests the necessity for young professionals to enter tertiary institutions to strengthen socio-demographic capacity, while focus should be directed toward research and creative competencies.

The composition of examined educators according to their roles was as follows: 20% professors, 50% associate professors, 24% senior lecturers, and 6% lecturers (Figure 3).
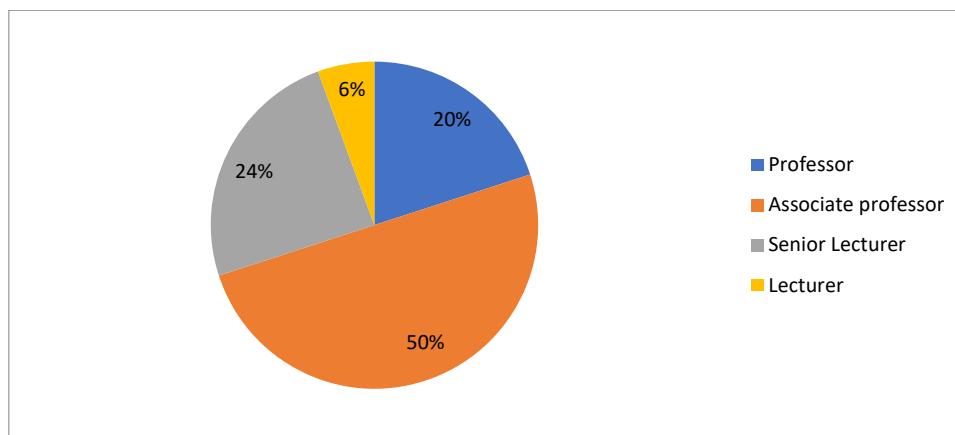
Figure 3: Positions of experiment participants

Furthermore, it was essential to evaluate how elevated allegiance is characterized by strong dedication. We regarded dedication as firm conviction in institutional values and embracing of objectives at the university where the educator is employed. Beyond dedication in contemporary circumstances, engaging educators in university operations is likewise essential, therefore 50.2% of the examined educators responded that they engage only partially (demonstrate interest solely in immediate circumstances), 25.5% engage moderately (understand the current circumstances but perform only what is expected of them), and 18.4% engage completely (are informed about everything occurring at the university and remain active). Additionally, 5.9% indicated that they virtually do not engage, consequently they restrict themselves to fulfilling their fundamental responsibilities (Figure 4).
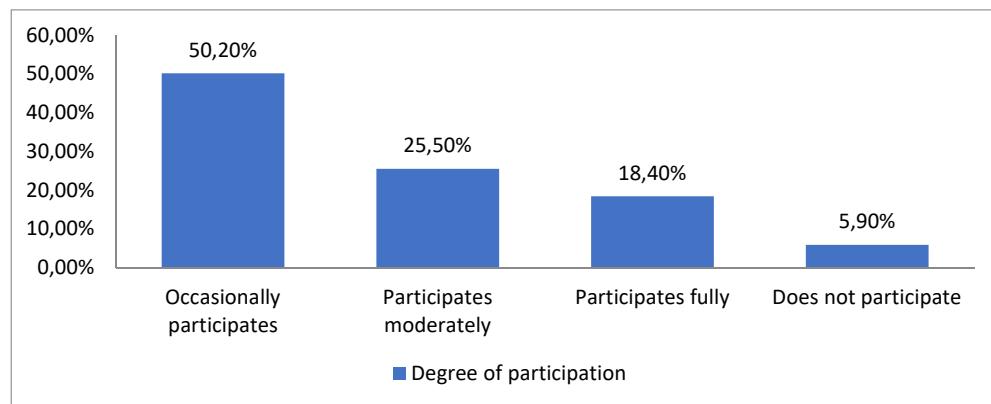
Figure 4: Involvement of faculty members in university work

Teachers' attitudes toward their work shape their orientation toward self-improvement and development, quality performance of their duties, and achieving special status.

The surveyed teachers, evaluating the university as a workplace, noted that it provides opportunities for their self-realization (78.1%), creative growth (55.5%), communication (39.4%), and provides necessary resources, daily sustenance (37.2%), offers career opportunities (19%), and gives confidence in the future (15.3%). At the same time, only 36.4% of respondents indicated complete satisfaction with their work at the university, 55% expressed partial satisfaction, and 8.6% expressed dissatisfaction (Figure 5).
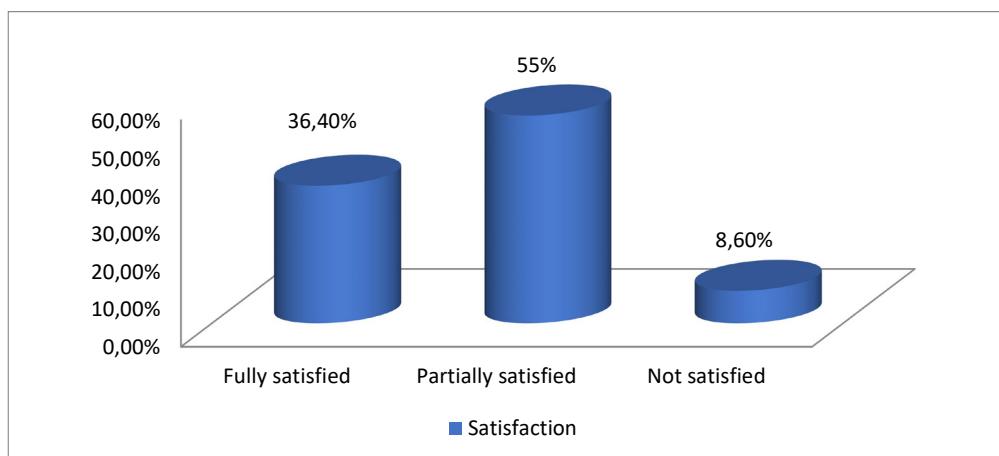

Figure 5: Faculty satisfaction with their workplace

Additionally, every third surveyed teacher (32.1%) noted their readiness to engage in both pedagogical and scientific activities, another third (30.7%) expressed interest in pedagogical and scientific activities, but only 18.2% indicated they would prioritize scientific activity under equal conditions. 7.6% of respondents support either purely pedagogical or purely research activities, while 11.4% believe their interest in working at the university relates to management activities.

Concerning the inquiry about what a contemporary educator should represent, participants' perspectives were as follows: 40.3% believe they should be scholar-practitioners, 29.7% - practitioner-educators, 22.6% - scholars, and 7.4% - educators. This suggests that research and practical elements dominate in university instructional activities.

The innovative capacity of university educators is linked with refreshing educational content, adopting new instructional technologies,

and acquiring new pedagogical approaches. 43.1% of participants (approximately half) refresh the educational content of courses they deliver annually, while 24.9% responded that they refresh as new information or educational literature emerges. Moreover, 24.3% of educators observed that they continuously employ new instructional technologies in their practice. Only 7.7% of participants regard traditional pedagogical approaches more efficient than innovative ones, consequently they do not employ new technologies in the instructional process. Hence, occupational capacity is conceptualized as the capability to effectively execute professional-pedagogical functions and deploy innovative pedagogical technologies.

When evaluating their competitiveness, 53.7% of examined educators indicated they completely satisfy the expectations of the university where they are employed; 23.3% are confident they can readily secure new employment; 19.7% recognize they do not entirely satisfy university expectations and require additional effort to ensure current competitiveness; only 3.3% acknowledged that securing new employment would be challenging.

Among factors affecting university teacher competitiveness in current conditions, they identify: having practical work experience (29.6%), scientific activity (18.8%), academic accessibility (10.7%), quality of methodological developments (10.4%), foreign language proficiency (10%), pedagogical experience (10.3%), and having an academic title (9.7%).

Thus, it can be noted that the surveyed teachers demonstrate a good understanding of the current situation in the higher education system, show readiness for changes, and strive to maintain their competitiveness and enhance their scientific potential. At the same time, they also believe that universities do not always have an educational environment that promotes comprehensive service delivery by faculty members.

The measure of professional development of an educator's personality is the level of formation of their professionally significant qualities. Theoretical and practical readiness to implement the functions of professional activity demonstrates the teacher's ability to be active both in terms of mastering knowledge and using it in practical activity under emerging pedagogical situations.

Professional potential contributes to the teacher's self-validation or self-affirmation in various activities aimed at developing pedagogical values, forms, methods, and tools of professional education. The level of professional potential development is a specific indicator showing the teacher's professional well-being and self-confidence, as well as determining the degree of confidence in the effectiveness of the pedagogical methodology, forms and methods of professional education they employ.

The actualisation of an individual's professional potential constitutes a fundamental determinant of organisational stability and societal integration, facilitating the development of positive professional identity, constructive cognitive orientations towards the professional milieu, and capacity for autonomous professional functioning. Within this framework, professional potential may be appropriately conceptualised through the lens of personal resources pertaining to self-knowledge, self-realisation, and self-actualisation. Pedagogical aptitudes and individual psychological characteristics serve as predictors of efficacious professional-pedagogical function implementation.

The professional activity of academic staff within higher education institutions is characterised by multifunctionality and is enacted through interactive engagement with multiple stakeholders within the educational process (students, their families, professional colleagues), thereby positioning such activity within a system of subject-subject relations. Concurrently, methodological provision for the educational process and research activity are undertaken, thus determining functioning within a system of subject-object relations with scientific knowledge.

Consequently, the professional identity of higher education academics represents an integrative unity of four role positions: instructor (knowledge transmission, stimulation

of academic engagement, development of professional competencies); mentor (facilitation of student personal development, cultivation of professional-personal qualities); researcher (generation of scientific knowledge within the disciplinary domain); and coordinator (structuring of the educational process, supervision and monitoring of independent student learning activities).

Therefore, personnel potential is evaluated according to the following indicators: educational activity, scientific-innovative activity, resource provision of educational and research activities. It shows not only the current readiness of all employee categories to perform functions, but also indicates general and long-term perspective possibilities, specifically: age, scientific-pedagogical qualification, practical experience, business activity, service quality (including efficiency), professional mobility and innovation, motivation level, etc.

Conclusion. The professional potential of university academics represents a complex, multidimensional construct encompassing professional competencies, innovative readiness, and personal characteristics which collectively determine pedagogical effectiveness. The analysis demonstrates that this potential emerges through the synthesis of theoretical knowledge, practical skills, reflexive capabilities, and value-oriented perspectives that correspond to the specific requirements of academic practice. Empirical data obtained through the survey of university academic staff provide valuable insights into the current state of professional potential development. The findings indicate that whilst academics demonstrate understanding of contemporary educational challenges and

express readiness for professional development, significant opportunities exist for enhancing institutional support systems. Notably, the research reveals that effective realisation of professional potential requires optimal alignment between individual capabilities and organisational conditions.

The conceptual framework of the study establishes clear distinctions between related terminological constructs, including "professional educational potential", "professional-educational potential of an academic", and "professional potential of an instructor". This terminological clarification contributes to theoretical precision in educational discourse and provides a foundation for more targeted professional development initiatives. From a practical perspective, the research demonstrates that human resource management practices in universities must address interconnected dimensions of academic staff development: strategic workforce planning, optimal utilisation of intellectual capital, and systematic competency enhancement. The findings suggest that institutional loyalty, organisational commitment, and professional engagement serve as critical mediating factors in the actualisation of academic potential. The investigation confirms that contemporary higher education transformation necessitates innovative approaches to academic staff development that integrate pedagogical excellence with research competency and technological proficiency. The research indicates that successful professional potential development requires institutional environments that support comprehensive academic engagement whilst maintaining focus on educational quality and student outcomes.

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Formation of Diagnostic Competencies of the Future Teacher-Psychologists in the Context of Inclusive Education

Abstract

Introduction. The development of inclusive educational practice in the Republic of Kazakhstan, where over 68,000 children with special educational needs are integrated into mainstream educational institutions, necessitates a reconceptualisation of the professional preparation of educational psychologists in the formation of diagnostic competencies. *Methodology and Methods*. Methods of theoretical analysis of domestic and international research in the field of professional readiness of educational psychologists were employed. A structured interview study was conducted with 5 lecturers to examine current issues in the preparation of prospective educational psychologists. *Results*. The structure of diagnostic competencies was determined, comprising cognitive, operational, and personal elements. Distinctive features of psychodiagnostic work with various nosological groups of children were identified. Directions for modernisation of the educational process were analysed: expansion of the practical component, integration of digital technologies, and development of a supervisory support system. *Scientific Novelty*. Requirements for diagnostic competencies of educational psychologists within the context of inclusive educational environments were analysed. *Practical Significance*. The research findings may be utilised for enhancing educational programmes for the professional preparation of future educational psychologists in the development of diagnostic competencies.

Keywords: diagnostic competencies, educational psychologist, inclusive education, professional preparation, psychological and educational assessment.

Introduction. Inclusive education (Stubbs, 2008; Daniels, 2013) as a priority direction in the development of contemporary educational policy in the Republic of Kazakhstan (Makoelle, 2025) necessitates a fundamental revision of approaches to the professional preparation of teaching personnel. The implementation of principles of equality in educational opportunities for all categories of learners, enshrined in national legislation, presents qualitatively new requirements for teacher competence in the field of psychological and educational assessment. Accordingly, the formation of diagnostic competencies becomes one of the key objectives of contemporary teacher education (Ospanova, 2020; Baimenova, 2015), as the effectiveness of individualising the educational process and the successful inclusion of children with special educational needs in mainstream educational environments depends precisely upon the quality of diagnostic activity.

According to data from psychological-medical-pedagogical consultations in the Republic of Kazakhstan, the country has 203,717 children with special educational needs from birth to 18 years of age, whilst over 68,000 children with SEN are enrolled in mainstream educational institutions, demonstrating that conditions for inclusive education have currently been established in 86% of mainstream schools (compared with 30% in 2015), which illustrates significant progress in the development of inclusive educational environments (Ministry of Education of the Republic of Kazakhstan, 2024, paragraph 1). This trend is determined by a complex of factors, including the enhancement of diagnostic methods for identifying

developmental disorders, increased awareness within the parental community regarding the rights of children with developmental differences, as well as changing social attitudes towards inclusive education. These processes highlight the necessity of preparing teaching personnel who possess a high level of diagnostic competencies and are capable of ensuring adequate assessment of the special educational needs of each learner.

High-quality psychological and educational assessment (Teshaboev, 2024) serves as the cornerstone of effective inclusive education, as it is precisely upon the basis of diagnostic data that individual educational pathways are designed. Timely and accurate assessment enables the identification of not only current difficulties in development and learning, but also the learner's potential resources, which constitutes a necessary condition for developing personalised educational programmes.

Within the system of psychological and pedagogical support for inclusive education, a particular role belongs to the educational psychologist (Ashton, 2006), who represents a key agent in the diagnostic process. The professional activity of educational psychologists within inclusive settings requires mastery of a broad spectrum of diagnostic methodologies and the capacity for comprehensive analysis of assessment results. Educational psychologists must possess competencies in the field of differential assessment, enabling them to distinguish between various types of developmental disorders and determine optimal learning conditions for each child.

However, analysis of existing educational programmes in higher education institutions demonstrates inadequate preparation of graduates for conducting high-quality diagnostic activity within inclusive environments. Traditional approaches to professional preparation do not fully account for the specificity of working with children who have diverse educational needs, leading to deficits in practical skills and limitations in theoretical knowledge regarding contemporary diagnostic methods.

Materials and Methods. The diagnostic competencies of educational psychologists

represent an integrative system of professional capabilities that ensure effective identification, analysis, and interpretation of the characteristics of pupils' psychological development within educational environments, forming the foundation of specialist professional activity and determining the quality of psychological and pedagogical support for participants in the educational process.

Structurally, the diagnostic competencies of educational psychologists (Kerimbayeva, 2023) comprise three interrelated components: cognitive (knowledge), operational (skills and abilities), and personal (professionally significant qualities). The cognitive component encompasses fundamental knowledge in the fields of general, developmental, educational, and special psychology, understanding of psychological development patterns, mastery of theoretical foundations of psychodiagnostics, and knowledge of the normative-legal frame-work of education. The operational component includes practical skills in conducting diagnostic procedures, interpreting results, compiling psychological reports, and developing recommendations. The personal component presupposes the presence of such professionally important qualities as empathy, tolerance, ethical responsibility, critical thinking, and capacity for reflection.

Diagnostic competencies acquire particular significance within the context of inclusive education, where consideration of the maximum diversity of learners' educational needs is required. The specificity of assessment within inclusive environments is determined by the necessity of applying an interdisciplinary approach, which presupposes close collaboration between educational psychologists and special educators, speech and language therapists, medical specialists, and teachers, ensuring comprehensive evaluation of child development and forming a holistic understanding of their educational needs. The interdisciplinary nature of the diagnostic process requires educational psychologists to possess capacity for professional communication, ability to integrate data from various specialists, and readiness for collegial decision-making (Table 1).

Table 1. *Structure of Diagnostic Competencies*

Psychological and educational assessment	directed towards studying the individual characteristics of learners within the context of educational activity. It presupposes systematic analysis of cognitive processes, emotional-volitional sphere, personal characteristics, and the child's social adaptation. Psychological and educational assessment is oriented not only towards identifying the actual level of development, but also towards determining the zone of proximal development, which enables the development of individually-oriented educational programmes.
Differential assessment	presupposes the educational psychologist's ability to distinguish variants of normal development from pathological conditions, as well as to identify specific developmental characteristics of various etiologies. This competency requires profound knowledge of age-related developmental norms, understanding of deviation criteria, and capacity for differentiated evaluation of identified characteristics, for instance, the assessment of borderline conditions and atypical developmental variants, which demands a high level of professional expertise.
Mastery of diagnostic tools and methods	The educational psychologist must professionally master standardised psychodiagnostic methodologies, be able to conduct structured and unstructured observation, and organise diagnostic interviews of various types. Competent use of diagnostic instrumentation presupposes understanding of the psychometric characteristics of methodologies, conditions for their application, limitations and possibilities for result interpretation; the ability to adapt diagnostic procedures to the individual characteristics of the examinee, including children with disabilities.

The integration of all components of diagnostic competencies ensures the formation of professional readiness in educational psychologists for conducting high-quality diagnostic activity within contemporary educational environments. The development of these competencies requires continuous professional improvement, study of new diagnostic approaches and methods, as well as reflection upon one's own professional activity. Only comprehensive development of all structural components of diagnostic competencies will enable educational psychologists to effectively address the tasks of psychological support for learners and contribute to creating optimal conditions for their development and learning.

Assessment within inclusive educational environments (Michalík, 2020; Hendrawati, 2023) represents a complex interdisciplinary process requiring a fundamentally different approach compared to traditional models of special education. The contemporary paradigm of inclusive education necessitates reconceptualisation of diagnostic procedures, taking into account the heterogeneity of the learner population, the diversity of their educational needs, and sociocultural characteristics.

One of the key features of assessment within inclusive environments is its multi-level character, presupposing the conduct of screening, in-depth, and dynamic examinations with the involvement of specialists from various fields. An interdisciplinary team, including educational psychologists, special education teachers, speech and language therapists, medical professionals, and social pedagogues, ensures a holistic approach to child development assessment, enabling identification not only of current difficulties but also potential opportunities for academic and social progress.

The assessment of children with various nosological forms of developmental disorders (Klin, 1997; Achenbach, 2008) within inclusive education settings is associated with a number of specific methodological and practical complexities (Table 2).

Table 2. *Features of Assessment for Children with Various Nosological Forms*

Children with autism spectrum disorders	When examining children with autism spectrum disorders, particular significance is acquired by consideration of sensory characteristics, communication patterns, and behavioural manifestations, which requires adaptation of standardised diagnostic procedures and creation of a special sensory-comfortable environment. The use of visual supports, structuring of examination time frames, and ensuring predictability of procedures become integral components of quality assessment for this category of children.
Children with developmental delays	Assessment of children with developmental delays requires a differentiated approach to evaluating cognitive processes, taking into account the uneven development of various psychological functions. It is necessary to conduct longitudinal observations to identify the zone of proximal development and determine optimal pedagogical strategies. Particular attention is devoted to analysing the child's capacity for learning, their ability to transfer acquired skills, and utilisation of various forms of assistance.
Children with sensory impairments	Assessment of children with sensory impairments presupposes the use of specialised equipment and adapted methodologies. When examining children with hearing impairments, it is necessary to employ visual stimuli, sign language, or finger spelling, depending upon the degree of hearing loss and the communication means used by the child. Assessment of children with visual impairments requires the use of tactile and auditory evaluation methods, adaptation of test materials taking into account residual vision or its complete loss.

A fundamental principle of contemporary assessment within inclusive environments is the resource-oriented approach, which presupposes identification and actualisation of the child's strengths alongside identification of areas requiring corrective and developmental intervention. This approach is based upon Howard Gardner's theory of multiple intelligences (Helding, 2009) and strengths-based theory, emphasising the individual abilities, interests, and talents of each child. Resource-based assessment includes evaluation of social skills, creative abilities, motivational sphere, adaptive behaviour, and other competencies that serve as support for compensating existing impairments.

Ethical aspects of assessment within inclusive educational environments are regulated by principles of deontology and require strict adherence to professional standards. The principle of confidentiality presupposes limiting access to diagnostic information to the circle of specialists directly participating in the educational process, and obtaining informed consent from parents or legal guardians for conducting examinations and using their results.

Prevention of stigmatisation represents one of the central ethical tasks of the diagnostic process. Educators must avoid using labels and stereotypical representations, focusing on describing the child's specific educational needs. Assessment results should be formulated constructively, emphasising developmental possibilities and necessary conditions for successful learning, rather than deficits and limitations.

The principle of non-discrimination requires ensuring equal opportunities for all children when undergoing diagnostic procedures, regardless of their ethnic background, socio-economic status, linguistic characteristics, or nature of developmental disorders. Cultural-linguistic adaptation of diagnostic instruments becomes particularly relevant within polyethnic educational environments.

The dynamic character of assessment within inclusive environments presupposes regular monitoring of child development and adjustment of educational programmes in accordance with changing needs, ensuring personalisation of the educational process and contributing to maximum realisation of each learner's potential within mainstream educational institutions.

Thus, assessment within inclusive educational environments represents a complex, multifaceted process requiring high professional competence from future educational psychologists, adherence to ethical principles, and use of contemporary scientifically-grounded methods for evaluating the development of children with diverse educational needs.

The formation of diagnostic competencies in future educational psychologists (Kerimbayeva, 2023) represents a multifaceted process requiring integration of theoretical knowledge, practical skills, and contemporary technological solutions (Table 3).

Table 3 – Components of Diagnostic Competency Formation in Future Educational Psychologists

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Theoretical preparation	represents the fundamental foundation for forming diagnostic competencies, encompassing in-depth study of the foundations of special psychology and inclusive education. Within this area, students master the conceptual foundations of psychodiagnostics, study patterns of psychological development in children with various educational needs, and analyse theoretical models of inclusive education and their practical application. Particular attention is devoted to studying ethical principles of psychodiagnostic activity, normative-legal foundations of working with children with disabilities, as well as contemporary concepts of the social model of disability. The theoretical component of preparation includes mastering the methodological foundations of psychometrics, statistical methods for processing diagnostic data, and principles of interpreting psychological examination results.
Practice-oriented learning	represents an element of professional preparation that ensures transformation of theoretical knowledge into practical abilities and skills, implemented through the use of case-study methods, enabling students to analyse real situations from educational psychology practice and make grounded diagnostic decisions. Simulation technologies create a safe educational environment for practising diagnostic procedures, allowing future specialists to acquire experience in conducting examinations without risk of causing harm to real clients. Particular significance lies in organising practical work with children under supervision of experienced specialists, which ensures formation of professional identity and development of empathetic abilities. During practice-oriented learning, students master skills of establishing contact with children of various age groups, learn to adapt diagnostic procedures to individual characteristics of examinees, and develop observational abilities and analysis of behavioural manifestations.
Use of contemporary diagnostic methodologies	represents an innovative direction in the preparation of educational psychologists, reflecting current trends in the development of psychodiagnostics. The introduction of digital tools into the educational process enables students to master computerised methods of psychological testing, software complexes for processing and interpreting examination results, and systems for monitoring children's psychological development. Neuropsychological approaches enrich the diagnostic arsenal of future specialists, providing opportunities for deeper understanding of mechanisms underlying psychological developmental disorders and development of individualised corrective and developmental programmes. Mastering contemporary methodologies also presupposes studying principles of evidence-based practice in psychology, critical analysis of validity and reliability of diagnostic instruments, as well as ethical aspects of using technologies in work with children.

The integration of all preparation components ensures formation of comprehensive diagnostic competence in future educational psychologists, encompassing theoretical awareness, practical abilities, and readiness to use innovative technologies in professional activity. Such an approach to professional preparation contributes to forming specialists

capable of effectively addressing tasks of psychological and pedagogical support for children within inclusive education settings, ensuring high quality diagnostic services and adherence to professional and ethical standards of practice.

Results and Discussion. With the aim of studying practical experience and identifying problems in the preparation of educational psychologists, an empirical study was conducted among the academic staff of a higher education institution providing training in the direction 6B01101 Pedagogy and Psychology. The study involved 5 lecturers from the Department of Pedagogy and Psychology. The data collection method employed was a structured interview, including three key questions directed towards analysing existing educational programmes, identifying difficulties in forming diagnostic skills, and determining the role of practical preparation in the professional development of future educational psychologists.
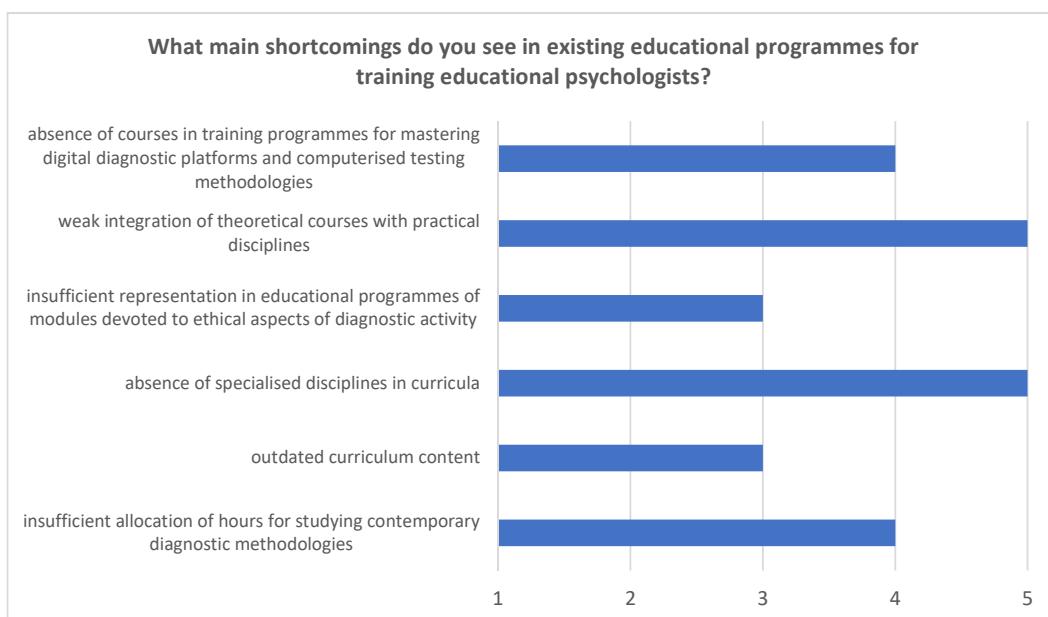

Figure 1: Results of Academic Staff Responses to the First Block of Questions

Analysis of respondents' answers to the first question "What main shortcomings do you see in existing educational programmes for training educational psychologists?" (Figure 1) revealed systemic problems in the organisation of the educational process. Four out of five surveyed lecturers noted insufficient allocation of hours for studying contemporary diagnostic methodologies, whilst three respondents indicated outdated programme content that does not reflect current trends in psychodiagnostic development. All study participants emphasised the absence of specialised disciplines in curricula devoted to working with children with autism spectrum disorders and other neurodevelopmental characteristics.

Respondents also noted insufficient representation in educational programmes of modules devoted to ethical aspects of diagnostic activity (three out of five surveyed), as well as weak integration of theoretical courses with practical disciplines (all participants). Particular concern among lecturers is caused by the absence of courses in training programmes for mastering digital diagnostic platforms and computerised testing methodologies, which was noted by four out of five respondents.
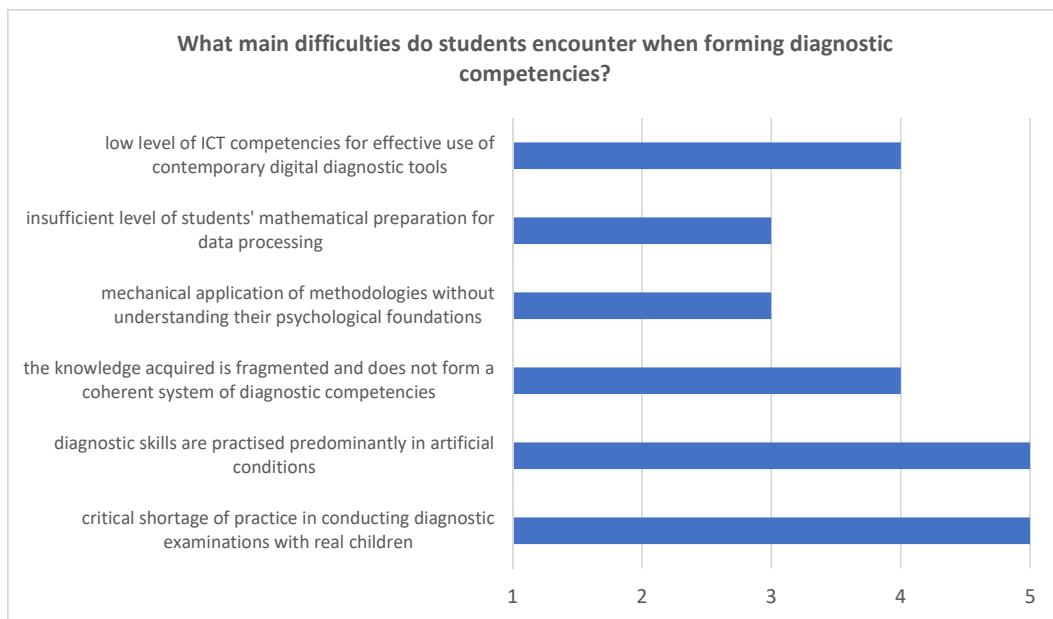
Figure 2: Results of Academic Staff Responses to the Second Block of Questions

The second block of questions "What main difficulties do students encounter when forming diagnostic competencies?" (Figure 2) revealed key barriers in professional preparation. All study participants indicated a critical shortage of practice in conducting diagnostic examinations with real children. Lecturers noted that students have the opportunity to practise diagnostic skills predominantly in artificial conditions, using role-playing games and simulations, which does not ensure formation of stable professional competencies.

A significant problem is represented by weak interdisciplinary integration in the educational process, which was indicated by four out of five study participants. Respondents emphasised that knowledge acquired by students within various disciplines (general psychology, developmental psychology, special psychology, pedagogy) remains fragmented and does not form a coherent system of diagnostic competencies. Lecturers noted students' difficulties in establishing connections between theoretical knowledge and practical diagnostic tasks, which manifests in mechanical application of methodologies without understanding their psychological foundations.

Additional difficulties are related to students' insufficient level of mathematical preparation (three respondents), which complicates mastery of statistical methods for processing diagnostic data, as well as low levels of information and communication competence (four participants), hindering effective use of contemporary digital diagnostic tools.

Analysis of responses to the third question "How do you assess the role of practical training and supervision in forming diagnostic competencies?" (Figure 3) demonstrated unanimous recognition by lecturers of the critical importance of these components in the educational process. All study participants emphasised that high-quality pedagogical practice is a necessary condition for forming professional diagnostic competencies; however, the existing organisation of practical training does not meet contemporary requirements.

How do you assess the role of practical training and supervision in forming diagnostic competencies?
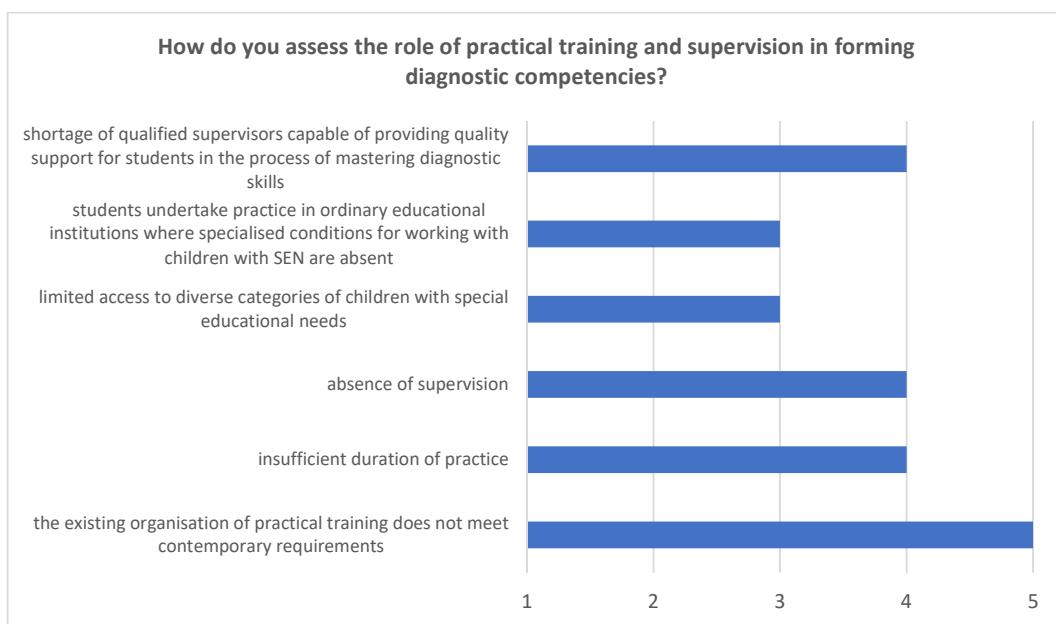
Figure 3: Results of Academic Staff Responses to the Third Block of Questions

Respondents identified several key problems in practice organisation: insufficient duration of practical periods (four out of five surveyed), absence of supervision (four participants), limited access to diverse categories of children with special educational needs (three respondents). Lecturers noted that in most cases students undertake practice in ordinary educational institutions where specialised conditions for working with children with SEN are absent, which does not allow formation of necessary inclusive competencies.

Particular attention was devoted by study participants to the role of supervision in professional development. Four out of five respondents indicated an acute shortage of qualified supervisors capable of providing quality support for students in the process of mastering diagnostic skills. Lecturers emphasised that effective supervision should include not only monitoring correct application of methodologies, but also developing students' reflective abilities, forming professional ethics, and skills for interpreting diagnostic data within the context of individual child characteristics.

The results of the conducted study demonstrate the existence of problems in preparing educational psychologists for diagnostic activity. The identified deficits concern all levels of the educational process:

from curriculum content to organisation of practical training. The obtained data indicate the necessity for fundamental revision of approaches to forming diagnostic competencies, taking into account contemporary requirements of inclusive education and achievements in psychological science. The research results may serve as a foundation for developing educational programmes and technologies for training educational psychologists capable of effectively conducting diagnostic activity within inclusive educational environments.

Conclusion. The conducted study confirms the significance of transforming the system of professional preparation for educational psychologists within the context of developing inclusive educational practice in the Republic of Kazakhstan. The shortcomings of educational programmes identified through empirical analysis, including imbalance between theoretical and practical preparation components, absence of contemporary diagnostic technologies, and insufficient supervisory support, demonstrate the necessity for modernising approaches to forming diagnostic competencies. Particular relevance is acquired by implementing innovative educational technologies that contribute to developing future educational psychologists' capacity for effective psychodiagnostic support of

children with special educational needs within mainstream educational institutions.

Prospects for further development of this research direction are related to developing a comprehensive model of professional preparation for educational psychologists that integrates achievements of contemporary psychological science, requirements of the normative-legal framework of inclusive education, and demands of educational practice. The most important directions for improving the teacher preparation system include creating specialised educational-methodological complexes oriented towards mastering resource-oriented diagnostic approaches, forming a network of base sites for organising quality practical preparation of students, as well as developing a system of continuous professional development for practising educational psychologists. Implementation of these measures will contribute to enhancing the quality of psychological and pedagogical support for participants in the inclusive educational process and ensuring equal opportunities for all categories of learners.

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Pedagogical Discourse on the Development of the Scientific and Innovative Potential of the Future Teacher

Abstract

Introduction. The study addresses the issue of developing the scientific and innovative potential of future teachers, as it encompasses their research skills, ability to design and implement innovative activities, and readiness to apply the achievements of modern science in the educational process. A pedagogical experiment was conducted involving control and experimental groups. In the experimental group, two test measurements were administered: pre-training and post-training. The evaluation of the program's effectiveness included measurements using the Dimensions of the Learning Organization Questionnaire - DLOQ, the Utrecht Work Engagement Scale - UWES-9, and the Innovative Work Behavior scale - IWB. *Results.* The results of the pedagogical experiment clearly indicate the emergence of a strong interest among future teachers in scientific and innovative activities, as well as the need for their systematic organization at all levels of teacher education. The experimental group demonstrated statistically significant improvements in indicators of engagement in scientific activities. The assessment of the motivational-value component for innovation development revealed an average level within the motivational-need block, with external motivation prevailing over internal motivation indicators. *Scientific novelty.* The effectiveness of practice-oriented tasks has been proven as a motivational tool that promotes active and conscious exploration of cause-and-effect relationships in nature. *Practical significance.* The implementation of a specialized teaching methodology aimed at developing the scientific and innovative potential of future teachers will significantly enhance their knowledge and competencies.

Keywords: statistically significant improvements in indicators of engagement and scientific-innovative potential.

Introduction. The issue of developing the scientific and innovative potential of future teachers has been and remains relevant within the pedagogical community over time. In the context of rapid technological advancement, globalization, and changes in educational approaches, the tasks related to teacher training are becoming increasingly complex and multifaceted.

The key issues in developing the scientific and innovative potential of future teachers include:

1. The innovative and scientific component of the psychological and pedagogical readiness of future teachers;

2. The development of personal motivation for innovation as a foundation of the university educational process;

3. The development of the scientific and innovative potential of future teachers as an integrative essence of research activity.

Based on the implementation of the idea of developing the scientific and innovative activity of future teachers as the «basic material» from which an innovative style and scientific potential are formed, it is important to substantiate, in the view of classical scholars such as V.I. Slobodchikov and V.P. Bespalko, the description of the structural components of an individual's innovative potential. Scientific potential is associated with cognitive functioning and implies the creation of a valuable intellectual product-intellectual satisfaction (A.I.Savenkov et al., 2007; V. A. Slastenin et al., 2003; L. M. Mitina et al.,1995).

The innovative potential of future educators is described as a combination of motivational, cognitive, and creative components (O.N. Knyazeva, Yu.V. Fedorova, E.I. Kolesnikova).

According to E.A. Yamburg (1997), when utilizing the scientific and innovative potential of young researchers, it is crucial to integrate scientific research into the educational process so that students can engage with new educational models and technologies, and participate in educational projects and initiatives. A.V. Mudrik emphasizes the importance of developing critical thinking and innovative competencies among future teachers within the context of educational standards (A.V. Mudrik, 2024).

The process of educational development-with its inherent innovative component-begins with the influence of the need for change in the sphere of higher education.

However, one of the main challenges in teacher education is the insufficient breadth of the academic repertoire, which highlights the importance of the psychological component-namely, the motivation of future teachers to develop their scientific and innovative potential. Motivation for self-realization through scientific and innovative potential contributes to the expansion of academic repertoire and enables the development of professionally significant and personal qualities.

The innovative potential of university students, as a professionally important personal resource with a multi-component structure, has been reliably addressed in national scientific research (S.M. Dzhakupov, G.Zh. Lekerova, U.M. Abdigapbarova, O.B. Tapalova). The range of types of activity that determine the development of an individual's scientific and innovative potential has been examined by Zh.I. Namazbayeva and N.B. Zhienbayeva.

As shown in international studies, modern learning environments allow the implementation of innovative pedagogy, in which learning scenarios-as noted by J. Dewey-are oriented toward developing students' critical thinking and independence. In his seminal work Democracy and Education, the author viewed the future teacher as an active participant in creating innovative practices and technologies.

P. Freire emphasized that the involvement of future teachers in the process of implementing innovative pedagogical practices and technologies significantly enhances learning outcomes and facilitates adaptation to an evolving educational landscape (P. Freire, 1995).

To intensively foster the potential of future teachers as catalysts of scientific research and innovation, M. Fullan, R. Marzano (2019) and L. Darling-Hammond (2001) emphasize the need to integrate scientific and innovative methods into their professional preparation.

Emphasizing the importance of developing innovative and scientific competencies in future teachers, C. Watkins, J. Adler, and F. Mutohhari note that certain gaps still remain:

- first, quantitative evidence on the effectiveness of professional development programs for teachers in innovative learning remains limited;

- second, although the implementation of innovative educational technologies, such as flipped learning, is widely discussed, there are still unresolved issues related to the practical application of these technologies in various educational contexts (Watkins S., 2005, Adler J. 2024).

Our comparative analysis of domestic and international literature revealed that the definition of scientific and innovative potential has diverse interpretations.

For instance, N.F. Vishnyakova suggests three approaches to studying the innovative potential of an individual through the category of creativity, viewing it as:

– a personal category related to self-actualization;

– a creative process;

– a product of activity associated with creating something new.

She justifies the concept of a potential model of innovative behavior by stating that «the process of transforming the potential capabilities of future teachers into actual ones, at the psychophysical level of personality development, means self-actualization» (Vishnyakova N.F., 1996).

D. Kokurin (2022) argues that «...innovative potential includes hidden capacities of

accumulated resources that can be activated to achieve the goals of the subjects».

M.I. Sitnikova (2007) characterizes the structure of an individual's innovative potential as comprising personal values, capabilities, goal-setting, and individuality-all traits of a person striving for self-development and continuously seeking to realize their own talents.

The structure of innovative potential, according to A.D. Karnyshev and D.V. Ushakov, is presented as an interpenetration of three components, combined into a unified block that consists of:

- professional competencies: a wide range of knowledge; multifaceted abilities and interests; the ability to independently analyze problems; communicative skills; high levels of self-esteem and academic achievement; creativity;

- scientific insight: critical and creative thinking; a rich imagination; intuitive ability to identify emerging trends;

- motivational orientation: a strong focus on achievement and success (Karneshev A.D., 2010).

A.A. Befani suggests viewing the structure of innovative potential as comprising:

- innovative identity, which is based on personal characteristics;

- innovative literacy as the core of personal self-identification;

- scientific-innovative individuality of students as the content that integrates both personal and activity-based components (Befani A.A., 2010).

In I.V. Mironova's study «The Innovative Potential of Personality as a Category of a Scientific Phenomenon», the essence of the concept «innovative potential of personality» is thoroughly examined through the etymological analysis of the terms «innovation», «potential» and «personality» (In I.V. Mironova, 2015).

In our work, we attempted to differentiate the concepts of «scientific potential» and «innovative potential» based on their fields of use, depending on the specific context of their application in the professional training of future teachers (Table 1).

Table 1. *Comparative analysis of the functional and substantive components of the concept «scientific-innovative potential»*

Concept	«Scientific Potential»	«Innovative Potential»
Origin of the Concept	Potential (from Latin «potential» – power) – a source, an opportunity that can be used to achieve a scientific goal.	Potential (Eng. «potential») – a combination of personal qualities that determine the possibility and limits of participation in innovation.
Effectiveness, Quality of Scientific-Innovative Potential Development		
Personal Aspect	«Hidden capabilities» in achieving a scientific goal (M.I. Sitnikova); «Hidden sources» used by the individual to reach a specific goal (V.E. Klochko).	Internal reality of the ability to create and apply innovations in research (P.V. Khaidakyn); Combination of opportunities in the innovation sphere (V.A. Lopatin).
Formative Influence.	An inner reality of the ability to create and use innovations in the process of scientific research (P.V. Khaidakyn).	A set of opportunities in the field of innovation (V.A. Lopatin); «Inner purposefulness», with the potential to elevate values to a new level (V.A. Nikitin); The resource-based degree of readiness to realize opportunities (O.M. Krasnoryadtseva).
Result	Constructive personal contribution to scientific collaboration (L.M. Oganezov); Accumulator of scientific initiative, realization of hidden resources – core content and main goal (N.B. Zhienbayeva).	Preparation of specialists for the New Era; Innovative creation, resource elements of personal potential; Generating source introducing new elements into education with positive change regarding selected parameters (A.V. Khutorskoy).

Our comparative analysis indicates that at the core of the essential manifestation of the term «scientific-innovative potential» lies its foundational element - «potential» (from Latin potentia - «strength»).

Following I.V. Mironova's approach to the development of innovative abilities and capacities, understanding the inner processes of personality development, and its usage within higher education, we define scientific-innovative potential as:

- a complex synergistic construct combining and relating;

- personal values (goal values, relational values, educational values, instrumental values, quality values);

- the abilities and capacities of the individual (the scope and quality of knowledge, skills, competencies, and personal experience);

- individual characteristics of various mental processes (attention, memory, thinking);

- biologically determined traits (temperament, aptitudes);

- emotional stability as a counteraction to the unfavorable effects of an innovative environment;

- goal-setting orientation, focused not merely on useful outcomes but primarily on the realization of one's innovative potential.

The individuality of the person, seen as the ability for self-development and discovering appropriate ways to reveal and build hidden capabilities and capacities, thereby accumulating personal resources to solve specific tasks and achieve certain goals (Tapalova, O., & Zhiyenbayeva, N.,2024).

Based on the above, we can assert that within the framework for developing the scientific-innovative potential of future teachers, the specific characteristics of this phenomenon's development have not been sufficiently considered, and there has been inadequate representation of it within domestic pedagogical research.

Materials and Methods. In the course of this study, a survey of 80 master's students was conducted, allowing for a comprehensive assessment of the process of developing the scientific and innovative potential of future

teachers. The participants included first- and second-year master's students from Abai Kazakh National Pedagogical University and Khoja Ahmed Yasawi International Kazakh-Turkish University.

The study was conducted during the first and second semesters of the 2024–2025 academic year. The research design was experimental, encompassing two measurement points: pre- and post-training assessments. The experimental approach employed a survey method.

The evaluation of the program's effectiveness utilized several established scales:

- DLOQ (Dimensions of Learning Organization Questionnaire): This instrument assesses the organizational learning environment and its alignment with learning-oriented practices.

- UWES-9 (Utrecht Work Engagement Scale – 9 items): This scale measures work engagement across three dimensions: vigor, dedication, and absorption. The Russian version of the UWES-9 has demonstrated acceptable psychometric properties, including high internal consistency (Cronbach's alpha = 0.88) and a three-factor structure that fits the data well.

- IWB (Innovative Work Behavior Scale): This scale evaluates innovative behavior in the workplace, encompassing three aspects: idea generation, idea promotion, and idea implementation. The scale employs a 5-point Likert scale ranging from 1 («very little») to 5 («very much»). Reliability coefficients (Cronbach's alpha) for the subscales have been reported as follows: idea generation = 0.82, idea promotion = 0.78, and idea implementation = 0.81.

The IWB questionnaire comprises nine items, with three items dedicated to each of the three dimensions:

- idea generation: items 1, 4, 7;
- idea promotion: items 2, 5, 8;
- idea implementation: items 3, 6, 9.

The reliability of the IWB scale, calculated using Cronbach's alpha, was 0.85, indicating high internal consistency. The reliability coefficients for the subscales were 0.82 for idea generation, 0.78 for idea promotion, and 0.81 for idea implementation. These scales collectively

facilitate the analysis of respondents' levels of engagement, innovative thinking, and readiness to learn, providing a comprehensive assessment of the program's impact on participants.

This study surveyed 80 master's students, enabling a comprehensive assessment of the development process of the scientific and innovative potential of future teachers. The participants were first- and second-year master's students from the Abai Kazakh National Pedagogical University and the Khoja Akhmet Yassawi International Kazakh-Turkish University.

To determine whether the groups (first- and second-year master's students) were equivalent in terms of their initial knowledge levels, an independent samples t-test was conducted. The mean values and standard deviations for the DLOQ, UWES-9, and IWB scales are presented in Table 2. The analysis results showed no statistically significant differences between the groups ($p > 0.05$), confirming their similarity at the baseline level.

The reliability of the IWB scale was assessed using Cronbach's alpha, yielding a coefficient of 0.85, indicating good internal consistency. The subscales for idea generation, idea promotion, and idea implementation had Cronbach's alpha values of 0.82, 0.78, and 0.81, respectively, also reflecting satisfactory reliability. These findings suggest that the groups were comparable in their initial levels of engagement, innovative thinking, and readiness to learn, providing a solid foundation for evaluating the effectiveness of the intervention program.

Table 2. *Mean Values and Standard Deviations of Pre-Test Results*

Scale	Master's Students – 1st Year (n=35)	Master's Students – 2nd Year (n=45)	t	p
DLOQ	3.45 (0.68)	3.51 (0.71)	-0.76	0.45
UWES-9	4.12 (0.75)	4.08 (0.78)	0.49	0.62
IWB	3.98 (0.61)	3.95 (0.63)	0.37	0.71

The average score on the DLOQ scale was 3.45 (SD 0.68) for first-year master's students and 3.51 (SD 0.71) for second-year master's students. The difference between the groups on this scale was negligible ($t = -0.76$, $p = 0.45$), indicating statistically insignificant differences. The average score on the UWES-9 scale was 4.12 (SD 0.75) for first-year students and 4.08 (SD 0.78) for second-year students. The difference on this scale was also small ($t = 0.49$, $p = 0.62$), indicating no significant differences between the groups.

The IWB scale showed mean values of 3.98 (SD 0.61) for future teachers and 3.95 (SD 0.63) for practicing educators, with an insignificant difference ($t = 0.37$, $p = 0.71$), which also confirms the absence of significant differences.

The next stage-the assessment of the motivational-value component of readiness for the development of scientific-innovative potential at the stage of the ascertaining experiment-was conducted via online testing on the platform psytests.org.

Results. Table 3 presents the results obtained using the following methods: the five-factor personality questionnaire, the Academic Motivation Scale by T.O. Gordeeva with indicators of «motivation of cognition», «motivation of achievement», «motivation of self-development», and «amotivation». The «Need for autonomy and competence» scale by K.M. Sheldon, as adapted by D.A. Leontiev, including the «self-determination index».

The motivational-value component of readiness for the development of scientific-innovative potential was evaluated based on individual personality traits diagnosed by the above-mentioned methods. Statistical processing of the obtained results was performed using the Statistica 6.0 package; mean values, standard deviation, and Pearson correlation coefficient were assessed.

Table 3. *Parameters of the motivational-value component of readiness for the development of scientific-innovative potential (1st and 2nd year master's students)*

Master's Students	1st Year		2nd Year	
Parameters	Mean Value	Standard Deviation	Mean Value	Standard Deviation
Openness to Knowledge	2,87	5,53	2,97	5,43
Openness to Research Experience	3, 34	5,12	3, 54	5,32
Openness Index	3,20	4,04	3,40	4,14
Need for Competence	0,57	0,49	0,87	0,39
Need for Autonomy	0,12	0,49	0,32	0,39
Self-Determination Index	0,31	0,39	0,41	0,29

The empirical study revealed that the parameter «openness to experience» (positive attitude toward learning) (2.87/2.97) has higher scores and predominates over «openness to knowledge» (interest in new information, acquisition of new knowledge), with an openness index of 3.20/3.40.

Distinctive personality characteristics of the students include needs for autonomy and competence; these parameters are prerequisites for the individual's scientific-research and innovative activity and represent productive internal motivation and psychological well-being.

Table 4. *Parameters of motivation for the development of scientific-innovative potential in 1st and 2nd year master's students*

Type of Motivation	1st Year Mean		2 курс	
	Mean Value	Standard Deviation	Mean Value	Standard Deviation
Motivation for Innovation	12,67	3,12	12,87	3,18
Achievement Motivation	12,32	3,06	12,62	3,12
Self-Development Motivation	12,02	3,18	12,72	3,25
Intrinsic Motivation	10,98	3,16	10,18	3,34
Extrinsic Motivation	11,32	3,84	11,92	3,90
Amotivation	7,98	4,05	7,05	3,99

The interpretation of the obtained results shows that the lowest indicator among master's students is the need for autonomy, which means that students more often avoid initiatives to independently master new technologies and participate in research projects. Regarding the need for new knowledge, it becomes clear that students have a reduced need for involvement in research activities.

The indicators for the need for competence point to students' desire to be competent in scientific-research activities as well as in personal growth; however, the self-determination index is quite low.

The main component of the value-motivational readiness for the development of scientific-innovative potential is motivation for innovation. It should be noted that activity motives have different content and vary according to criteria such as their place in the hierarchy and intensity, the balance of which determines the activity of the future teacher.
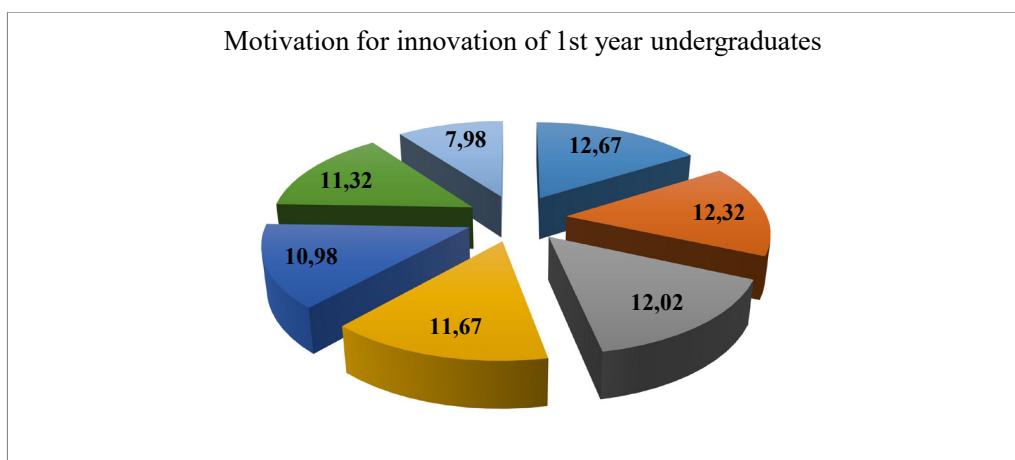
Figure 1: Parameters of motivation for innovation among 1st-year master's students

An important aspect in studying this component is the balance between intrinsic and extrinsic motivation. Table 3 and Figures 1 and 2 present diagnostic results from the Motivation Scale.
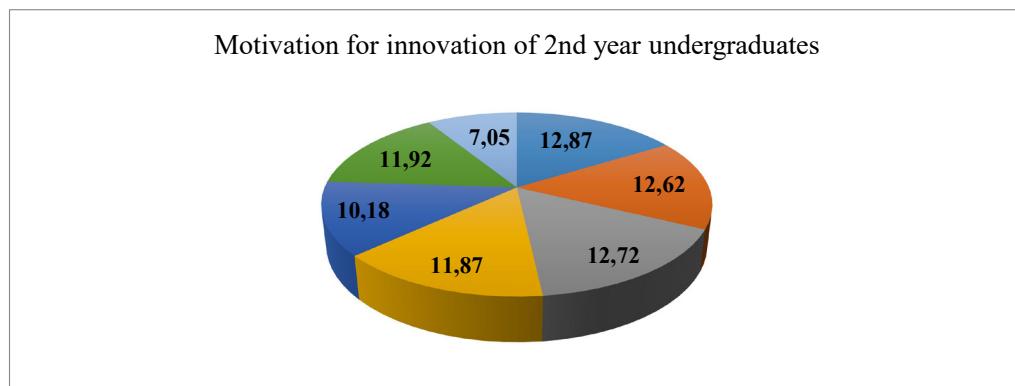
Figure 2: Parameters of motivation for innovation among 2nd-year master's students

The assessment of the motivational-value component for innovation development demonstrates an average level within the motivational-need block, with external motivation prevailing over internal motivation indicators. This indicates the need to work on developing an internal interest in the learning process and strengthening motivation for self-development in order to enhance the innovative potential of future teachers.

Discussion. The key element of the value-motivational component of readiness to develop the scientific and innovative potential of future teachers is motivation for innovative activity. This motivation is manifested in a teacher's aspiration to acquire new knowledge, seek non-standard solutions to professional challenges, and implement modern educational technologies and methods. It is important to note that the motives driving an individual's activity vary in content and qualitative characteristics: they may occupy different positions within the individual hierarchy of needs and manifest with varying degrees of intensity and stability.

The correlation of these characteristics determines the specifics of the future teacher's professional activity, shaping their readiness for research, perception of pedagogical innovations, and their practical application in the educational process. This is also influenced by several factors, such as receptiveness to change, openness to implementing new teaching methods, and the integration of technologies, as they are still at the early and intermediate stages of their careers and may actively seek opportunities for professional growth (Lian

et al., 2021). Younger teachers may also have a greater capacity to adapt to new teaching methods and interdisciplinary collaboration. They may exhibit a more flexible teaching style and a willingness to experiment with various methods (Krolevetskaya et al., 2021). Young and mid-career teachers may actively seek opportunities for professional development (McChesney et al., 2021), for example, to advance their careers; therefore, the current educational program could meet their needs for upskilling and provide them with tools and strategies to improve their research activities and innovative teaching methods. Furthermore, less entrenched habits may also play a role, making it easier for them to adopt new teaching methods and research practices (Hobbiss et al., 2021).

Conclusion. The scientific and innovative potential of a future teacher represents an integrative personal quality that combines cognitive, research, creative, and value-motivational components. Its development is based on the ability to engage in scientific inquiry, critical and creative thinking, mastery of modern digital tools, and readiness to apply innovative approaches in educational practice. The essence of this potential lies not only in the accumulation of knowledge but also in the ability to transform it into a valuable intellectual product-new pedagogical ideas, methodological solutions, and digital learning technologies.

Such potential enables future teachers to become not merely transmitters of ready-made knowledge but active participants in the scientific and innovation process. Scientific and innovative potential serves as the foundation for a teacher's professional competitiveness, shaping their readiness for continuous self-development, collaboration, and participation in educational reforms. It is a key prerequisite for the successful adaptation of teachers to the rapidly changing challenges of modern society and the digital educational environment.

The parameters of motivation for scientific achievement have shown to be highly significant for future teachers in terms of their readiness to develop scientific and innovative potential. The experimental study of future teachers' scientific and innovative potential makes it possible not only to assess the current level of students' readiness for innovative activities but also to develop effective pedagogical strategies for stimulating their research activity. Thus, the scientific and innovative potential of future teachers, in the context of their scientific and innovative development, is viewed as a complex integrative personal characteristic that encompasses individual abilities and resources enabling the generation of innovative ideas and behaviors, the capacity to align personal capabilities with the conditions of professional activity, and the ability to analyze situations within the modern research environment.

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Prospects for Professional Training for the Development of Autopedagogic Competence in Future Primary School Teachers

Abstact

Introduction. This article examines the issue of forming autopedagogic competence in future primary school teachers, highlighting the significance of lifelong learning in the context of educational modernization. Special emphasis is placed on fostering teacher professionalism and self-education, which are among the key objectives of Kazakhstan's national education development strategy. The study explores the psychological and pedagogical foundations of self-directed learning, identifying essential components of pedagogical competence and the need for continuous professional growth. *Methodology and Methods.* The study employed a combination of theoretical and analytical methods, including literature review and comparative analysis of contemporary pedagogical research. A qualitative assessment was conducted to evaluate current approaches to the development of autopedagogic competence, with a particular focus on teacher education practices in higher education institutions. *Results.* The research findings indicate that one of the primary indicators of successfully developed autopedagogic competence is the future teacher's awareness and readiness for independent professional development. Although various studies have addressed professional development more broadly, key aspects remain insufficiently explored – particularly those relating to the personalization of teacher training, the integration of self-education strategies in university curricula, and the articulation of clear indicators of pedagogical competence specific to the primary school context. *Scientific novelty.* This study contributes to the theoretical understanding of autopedagogic competence by identifying its core components and the factors influencing its development. It reveals significant gaps in teacher training programs regarding the support of self-directed learning, thus offering a new perspective on how universities can structure teacher education to promote lifelong professional growth. *Practical significance.* The findings offer evidence-based guidance for higher education institutions aiming to prepare competitive and competent primary school teachers. By emphasizing self-education, self-reflection, and continuous development, the study supports the design of teacher training programs that align with modern educational demands and foster meaningful, sustained professional engagement.

Keywords: autopedagogic competence; personality-oriented education; lifelong learning; motivation to learn; self-education; future primary school teacher.

Introduction. In light of ongoing global transformations, there is a growing need for a more qualified and skilled workforce. This highlights the importance of reinforcing national labor market strategies and modernizing the educational framework to fully realize the country's human capital.

At the same time, rapid technological advancements and the rise of new job categories demand contemporary competencies. Therefore, while enhancing the system for training young specialists, it becomes increasingly vital to develop continuous education opportunities for the current labor force. In connection with the aforementioned trends, on July 8, 2021, the Government of the Republic of Kazakhstan issued Resolution No. 471, approving the Concept of Lifelong Learning (Continuing Education) (Adilet.zan, 2021).

To reveal the above, we made an analysis of the literature devoted to this topic. Russian historical experience shows that already in the

XIX century many famous figures of science, literature, art, and public organizations helped others in resolving this problem – they created national libraries, reading rooms, people's houses, etc. In 1863–1866, the educational and literary magazine Self-education was published in St. Petersburg. At the beginning of the XX century, books were widely distributed.

In the second half of the 20th century, adult self-education and professional development systems were intensively developing. This need was reinforced by the development of mass media, which, on the one hand, enriched the process of self-education, and on the other hand, involved individuals in global events, creating the need to understand them.

The beginning of the XXI century is characterized by the humanization of self-education. Today it is aimed at the harmonious development of personality, the disclosure of human abilities, creative potential, self-expression, and the realization of spiritual interests. Self-education skills are developed primarily in the process of conducting various types of independent work of students provided for in the curricula (choosing the necessary literature, taking notes, reviewing what they read, writing abstracts, preparing reports, etc.) (Tarasova, 2017).

Modern educators and psychologists have also published various books on self-education of the individual. A good example is the book of R. Brandenburg (2008), Powerful Pedagogy: Self-Study of a Teacher Educator's Practice (Self-Study of Teaching and Teacher Education Practices), which describes the development of inner strength that encourages learners to achieve any learning goal they set for themselves.

Currently, there are various concepts of self-education; everyone understands it differently. However, in the process of our research we intend to reveal the topic of self-education and give an accurate definition of the term autopedagogic competence, which was first mentioned in O. M. Shiyan's research work (1999), where she justified the relevance of a term that had never been used before.

N. Kukharev and A. Markova characterize teaching competence as a synthesis of essential personal traits, including initiative, accountability, persistence, decisiveness, and confidence (Kukharev & Markova, as cited in Arenova, 2012). Similarly, N. Gluzman and E. Beznosyu highlight the critical role of embedding competence within the motivational-value framework of the individual, emphasizing that it significantly reflects the level of cognitive assimilation of knowledge (Gluzman & Beznosyu, as cited in Arenova, 2012). M. Kholodnaya conceptualizes competence as a distinct category of specialized subject knowledge that enables individuals to make effective decisions within a specific domain of activity (Kholodnaya, as cited in Arenova, 2012). L. Mitina defines competence as a combination of knowledge, skills, abilities, and applied methods, encompassing practical implementation, communication, and personal self-development (Mitina, as cited in Arenova, 2012). Within pedagogical science, A. Arenova emphasizes that competence is regarded as an integrative characteristic of an individual, determining their professional activity and authority in a given field (Arenova, 2012).

The process of cultivating autopedagogical competence in future primary educators remains an understudied area within contemporary pedagogical scholarship.

Materials and Methods. In our study, we carried out a theoretical analysis of domestic and international psychological, pedagogical, scientific, methodological, and specialized literature related to the research topic. Additionally, we examined the State Mandatory Educational Standard of the Republic of Kazakhstan and the standard curriculum for the educational program 6B01301 – Pedagogy and Methodology of Primary Education. This comprehensive analysis aimed to determine the stages of forming autopedagogical competence in future primary school teachers.

In contemporary culture, there are a number of opinions about the use of the concept of "competence" in teaching. For instance, it is considered: "this is an imitation of new words, they cannot be used, because there are traditionally used alternatives to "graduate level" and "academic qualifications", or

"competence" is widely used in other spheres of human activity and reflects the high quality of professional activity (C. Fernández-Morante et al., 2023). However, competence is a person's mastery of the relevant components, which include their personal attitude to this action and to their subject. Consequently, competence as a construct encompasses a wide spectrum of elements – ranging from cognitive and operational-technological dimensions to motivational, moral, interpersonal, and behavioral factors.

In order to activate an in-depth understanding of competence in our observations, we analyzed the formation of this term. It is well known that current pedagogical theory defines concepts by which, according to most researchers, it is possible to identify the main signs of teacher professionalism, which is indicated in Table 1 below.

Table 1. *The main signs of a future teacher's professionalism*

The main signs of a future teacher's professionalism	Authors (researchers)
Qualification, professionalism	V. Y. Sinenko
Professional competence (professional pedagogical competence)	I. A. Zyazyun, I. A. Kolesnikova, A. K. Markova
Autopedagogic competence	O. M. Shiyan
Pedagogical skill	V. I. Zagvyazinsky, I. A. Zyazyun, G. I. Khoziainov
Pedagogical creativity	V. A. Kan-Kalik, N. D. Nikandrov

The above-mentioned fundamental theories were the basis for the following conclusions. For example, E. F. Zeer focuses on professional competence as a complex of professional knowledge, skills, as well as methods of performing professional activities. V. A. Adolf defines teacher's competence as "a complex education that includes a complex of knowledge, skills, properties and qualities of a personality that provide variability, optimality and effectiveness of the construction of the educational process" (Arenova, 2012).

On the ground of current educational trends, the role of the primary school teacher extends far beyond the mere transmission of knowledge. Today's educators are expected to foster student engagement, cultivate intrinsic motivation, and create conditions conducive to individualized learning and continuous self-improvement. Achieving this involves a gradual transition from teacher-led instruction to a more autonomous learning environment, where pupils progressively take ownership of their learning process while maintaining a respectful and collaborative relationship with the teacher.

Within such an evolving pedagogical landscape, it becomes imperative for the primary educator to continuously broaden their expertise and actively apply their potential in solving complex instructional challenges. Professional excellence in this context is characterized by intellectual curiosity, commitment to the teaching profession, subject mastery, command of didactic methodologies, emotional intelligence, and the capacity to organize and communicate effectively. Pedagogical mastery, thus, is grounded in a constellation of refined professional traits.

The professional qualities of a teacher may be broadly categorized into three clusters: traits reflecting the educator's vocational orientation, attributes indicative of pedagogical talent, and competencies essential for the effective preparation of well-rounded pupils (Shchur et al., 2022). In this way, the teacher's personality emerges as a multifaceted synthesis of subject knowledge, humanistic values, and pedagogical skill.

In this manner, the notion of competence transcends the traditional understanding of knowledge, skills, and abilities. It encompasses motivational dynamics, ethical orientation, cognitive flexibility, problem sensitivity, and a strong sense of personal agency. A competent

teacher is not only capable of performing routine tasks but is also prepared to navigate non-standard situations with independence, purpose, and adaptability (Menlibekova et al., 2020).

From all this, a modernized concept arises as innovative teaching competence, which contributes to the formation of self-education of primary school teachers in accordance with the change in the strategy of the educational environment.

Accordingly, competencies do not exclude knowledge, skills and abilities, although they fundamentally differ from them. From knowledge – by the fact that they must be embedded within practical experience, rather than merely existing as abstract knowledge. From skills – by the fact that competencies can be applied to solving various kinds of tasks and in different situations (they have the property of transference). From abilities – by the fact that they are conscious and not automated; this allows a person to act not only in a typical, but also in non-standard situations (Mahlomaholo et al., 2023).

Analyzing the presented definitions, competence can be understood as a multifaceted category comprising five key components:

1. *Profound understanding* – a deep awareness of the essence of tasks and problems being addressed.

2. *Expertise and experience* – strong knowledge of existing practices in the field and active mastery of its best achievements.

3. *Adaptive decision-making* – the ability to select appropriate methods and strategies based on specific conditions of place and time. Therefore, it can be said that the autopedagogic competence of a primary school teacher is a complex, multidimensional psychological and pedagogical construct, each element of which involves the performance of mental and practical actions in their logical sequence, as well as the daily updating of knowledge and the desire to learn unusual things in a lifelong learning.

4. *Responsibility* – a strong sense of accountability for the outcomes of one's work.

5. *Reflective learning* – the capacity to analyze mistakes and make necessary adjustments in the pursuit of goals (Ilanloua & Zandb, 2011).

Equally important is that professional-individual competence includes a number of qualities, such as kindness and interest in students, willingness to accept constructive criticism from colleagues, having one's own view of the social situation and the world around, and understanding people with other values, interests, and abilities. All this presupposes the development and formation of self-education of a modern primary school teacher, which corresponds to the trends of the educational environment.

Looking into diverse scientific articles and dissertations, we generalized the term *autopedagogic competence* as follows: it is an integrative characteristic of a teacher's professional activity, including skills of self-education, self-development, introspection, and reflection, as well as the ability to independently improve and adapt to changing conditions of the educational process.

Equally important is the fact that professional and individual competence encompasses a broad range of personal attributes. Among these are empathy and genuine interest in students' development, openness to constructive feedback from colleagues, a well-formed personal worldview, and the capacity to engage with individuals who hold differing values, interests, or abilities. These qualities collectively contribute to the cultivation of a self-directed professional identity in the modern primary school teacher, aligning closely with the dynamic demands of today's educational landscape.

Through an analysis of a wide array of academic articles and dissertations, we have synthesized a working definition of the concept of *autopedagogic competence*. In this context, autopedagogic competence may be understood as an integrative trait of a teacher's professional profile, encompassing the abilities of self-directed learning, personal and professional growth, critical self-assessment, and reflective practice. It also implies the capacity for continuous improvement and autonomous adaptation in response to the evolving challenges of the educational environment.

The level of professional competence across any field is strongly influenced by an individual's

capacity to cultivate their creative potential and engage in purposeful self-improvement. Findings from our multiple experimental studies confirm a significant correlation between one's propensity for self-development and the nature and outcomes of their professional activities. These insights support the view that the cultivation of autopedagogic competence serves as a critical factor in attaining professional excellence, fully aligning with the principles of lifelong learning.

Based on the above, the professional and personal qualities of a teacher can be effectively interpreted through the lens of autopedagogic competence in future primary school educators. This integrative construct may be characterized by the following attributes:

- *a high degree of determination, proactiveness, and self-regulation;*

- *pedagogical self-awareness, reflected in the individual's unique cognitive and emotional framing of the educational world;*

- *a stable set of individual psychological traits, strong moral foundations, and other personal qualities essential to effective teaching practice.*

Thus, the autopedagogic competence of a primary school teacher can be defined as a multidimensional psychological and pedagogical construct. It includes the ability to perform cognitive and practical actions in a logical sequence, regularly update knowledge, and maintain motivation for continuous learning throughout life.

To accomplish the objectives of this research, the following methodological approaches were employed:

1. Statistical analysis – this enabled the collection and interpretation of data relevant to the development of autopedagogic competence among future primary school teachers.

2. Ranking technique – a rating-based evaluation was conducted to determine the hierarchy and significance of various components involved in cultivating self-educational capacity.

3. Scaling method – used to assess participants' levels of readiness for self-development and the degree of their professional competence formation.

Results. The notion of personal self-development is multifaceted and can be understood through its most defining characteristics. Firstly, self-development constitutes both a core human value and an intrinsic necessity. It reflects a person's moral obligation to oneself, rooted in the desire for personal growth and embedded in one's engagement with the surrounding world. Secondly, self-development emerges as the outcome of deliberate goal-setting and meaningful, value-driven activity. It encompasses the individual's pursuit of purposeful self-realization, inner reflection, and spiritual self-construction within a constantly evolving social and educational environment. Thirdly, self-development is a dynamic and transformative process, involving continuous internal change aimed at achieving personal growth. It is directed toward enriching one's moral, intellectual, and practical capacities, thereby fostering a fuller expression of one's potential. At its core, self-development is a creative endeavora – conscious effort to resolve internal contradictions and strive toward harmony across spiritual, physical, and social dimensions. In the context of teacher education, professional self-development may be defined as a purposeful and reflective process through which the future specialist seeks to fully actualize themselves within the social and professional spheres defined by their chosen field (Tarasova, 2017).

H. Cirali Sarica and Y. K. Usluel (2022) write in their works about the possibility of separating two types of self-education by independence level:

1. *Associated self-education* – caused and directed by an educational institution (school, university, courses, etc.); pursues the goal of expanding, supplementing, and deepening the material studied in an educational institution; related to the implementation of assigned tasks.

2. *Autonomous self-education* – caused, directed, and controlled by a person's own internal interests and needs; considered the highest level and more valuable with regard to individual creativity.

The following table 2 demonstrates the main components of autopedagogic competence and

their content (Akimov et al., 2023). This table may serve as a basis for the development of methods for the formation of autopedagogic competence in future teachers, as well as for assessing their current level of development within the framework of professional training.

Table 2. *Components of autopedagogic competence*

Component of autopedagogic competence	Content
Motivational	- interest in self-education; - striving for self-development; - desire to improve oneself in professional activities.
Cognitive	- theoretical knowledge in pedagogy, psychology, and teaching methods; - skills and abilities for organizing and implementing self-educational activities.
Operational and activity	- knowledge of methods and techniques of self-education; - ability to implement pedagogical tasks and solve professional problems.
Reflexive	- ability to adapt, refine, and enhance professional competencies in response to evolving demands.

The process of professional self-development is inherently linked to the formation of a creative and autonomous personality in the future specialist. For students, both personal and professional self-development must be regarded not merely as educational components, but as intrinsically valuable and personally meaningful objectives. To foster this perspective, the aims and content of university education must explicitly reflect the importance of self-development within the framework of professional training.

Accordingly, the foundational principles of primary teacher education programs are rooted in the idea of promoting both personal and professional growth. Activities such as self-education, self-directed learning, and systematic self-improvement – when combined with meaningful engagement in professional practice – serve as key mechanisms in shaping the autopedagogic competence of prospective primary school teachers (as well as specialists in other fields).

In its broadest formulation, the process of self-development may be understood as unfolding across several interrelated stages:

1. Developing self-awareness through deliberate introspection and self-knowledge;

2. Establishing a realistic self-assessment and recognizing the need for personal transformation;

3. Defining clear goals for self-development and creating a personalized plan for self-organization;

4. Executing this plan through self-educational practices, including self-regulation, self-analysis, self-control, and self-correction (Ilanloua & Zandb, 2011).

In this context, a teacher's autopedagogic competence emerges as a comprehensive personal and professional attribute. It reflects the educator's readiness and capacity to cultivate their creative potential and to engage in productive, ongoing self-improvement.

Ultimately, the realization of self-development within a student's professional journey contributes directly to the formation of a coherent system of autopedagogic competencies. These competencies are actualized through purposeful actions oriented toward solving personal and professional development tasks. They are grounded in pedagogical knowledge, practical experience, and a deep, value-laden commitment to the teaching profession.

At present, several approaches exist for integrating the concept of self-development into the professional formation of future primary school teachers. These approaches include:

- cultivating students' self-development skills primarily through pedagogical practice (the most common method);

- developing knowledge and skills related to self-development via a dedicated course on professional growth, supplemented by pedagogical practice (less frequent);

- integrating content on personal self-development across multiple domains – including a specialized course, methodological training, and pedagogical practice – (rarely applied) (Garcia, 2021).

Additionally, self-development has been conceptualized as a foundational principle in the construction of pedagogical education models. Within this framework, five structural blocks are identified, each corresponding to a phase of the developmental cycle: diagnostic, theoretical, technological, value-oriented, and problem-research components.

The formation of autopedagogic competence in future educators is influenced by a number of key factors:

- *The internalization of a professional value system and the development of a strong commitment to pedagogical excellence;*

- *Direct experience gained through teaching practice;*

- *Increased readiness and willingness to transform one's personality in alignment with the demands of the teaching profession* (Parpieva, 2023).

From a structural standpoint, the development of autopedagogic competence in students of primary education may be divided into two main stages:

1. *The Preparatory Stage* – This spans from the beginning of psychological, pedagogical, and methodological coursework to the conclusion of the initial phase of pedagogical practice. During this period, the focus is on systematically addressing tasks related to the students' personal and professional self-growth, such as:

- Enhancing motivation for pedagogical activity and fostering commitment to the teaching profession;

- Acquiring both theoretical knowledge and practical skills relevant to autopedagogic development, including self-knowledge tools (e.g., self-observation, self-diagnosis, self-analysis) and self-education techniques (e.g., self-discipline, self-organization);

- Developing essential professional traits and creative individuality, such as reflexivity (pedagogical reflection, introspection), pedagogical thinking, empathy, tolerance, and psychological flexibility (Crespí, 2022).

2. *The Main Stage* – During this phase, students actively demonstrate autopedagogic competence and gain practical experience in applying the principles of self-development. Pedagogical practice serves as a vital setting for this process, offering real-world scenarios through which students can test and refine their self-regulation and growth strategies.

This practical component includes a twofold structure:

- *Self-analysis of Professional Skills* – Upon completing the initial phase of practice, students reflect on their teaching performance, evaluating their core competencies and identifying key strengths and areas for improvement.

- *Autopedagogic Experiment* – In the subsequent phase, students design and implement a personalized self-development plan aimed at strengthening their pedagogical knowledge, teaching techniques, and professional attributes.

To support this process, students conduct a self-diagnostic assessment during the first week of practice. This evaluation measures their level of psychological, pedagogical, scientific, and methodological proficiency, alongside key variables such as teaching motivation, reflexivity, and pedagogical thinking. The results inform the creation of an individualized self-development program, which becomes the foundation for their internship journey.

Beginning in the second week, students follow their personalized plans while continuously engaging in self-monitoring and self-analysis. At the conclusion of the internship, they complete a final self-evaluation, reflecting on their growth trajectory and identifying further goals for professional development. This includes specifying the competencies and personal qualities that require continued advancement (Guillén-Gámez et al., 2022).

Building on these findings, a survey was conducted to assess the readiness of future primary school teachers to realize their developmental potential. The study sought to

evaluate their preparedness for entering the teaching profession and their ability to engage in sustained self-reflection and growth, drawing on their internship experiences as a foundation.

105 future primary school teachers of Zhetysu University named after I. Zhansugurov and Abai Kazakh National Pedagogical University participated in the survey. The questionnaires were written in Kazakh and Russian. The answers contained four possible options (yes, no, I find it difficult, partially) presented in different positions (Table 3).

Table 3. *Survey Results on Professional Competencies of Future Primary School Teachers*

Question (№)	Main Question	Responses (%)	Interpretation
Q6 (Figure 1)	Changes in professional interactions with colleagues (attendance, knowledge sharing, consultation)	66.3% – Yes 24.7% – No change 9% – Difficult to answer	Most participants noted positive changes, though a quarter saw no change.
Q12 (Figure 2)	Difficulties using educational-methodological complexes of the new program	Main difficulty: topics do not correspond to age characteristics 71.6% – can adapt Others – partially, no, or difficult	Indicates difficulties in mastering the updated program independently; need to revise content according to students' age.
Q11 (Figure 3)	Ability to combine theory with practice & knowledge of psychology	22.8% – Technologies not a hindrance 28.4% – Lack of skills 21% – Lack of ICT skills 27.8% – Nothing is a hindrance	Shows insufficient preparation and varying confidence levels among participants.
Technologies used	Problems in applying new technologies	Most use 5–10 technologies 22.8% – Lack of skills or experience Other barriers: lack of self-regulation, insufficient opportunities	Indicates limited technological integration and difficulties in application.
Q20 (Figure 4)	Readiness for the profession of primary school teacher	42.1% – Low readiness	Demonstrates that many students are not fully prepared for professional practice.
Competency criteria (76% participants)	Key competencies for professional auto-pedagogical development	- Mindset in general education - Knowledge of social sciences & law - Linguistic and multilingual skills - Understanding professional significance - Ability to design and implement programs with ICT - Creativity, knowledge, and adaptability	Reflects core competencies required for future teachers to be effective professionals.

The survey assessed competence of future primary school teachers in four main areas: personal qualities; readiness for self-education and self-development; formation of professional competencies; and application of new technologies.

As R. Garcia (2021) noted, "The personality of a teacher in an environment of learning and upbringing takes the first place; one or another of his properties will increase or decrease the educational influence of learning". Therefore, personal attributes have been recognized as

a fundamental dimension in the structure of autopedagogic competence among prospective primary school teachers.

Thedegreetowhichprofessionalcompetencies are formed in these future educators is reflected in their demonstrated readiness for continuous personal growth and their sustained capacity for self-directed learning and self-development. 70% of the survey participants indicated that they are proficient in modern teaching methods and can apply them competently in continuing education. However, 30% replied that they were not ready to work in the profession, as they considered their knowledge insufficient.
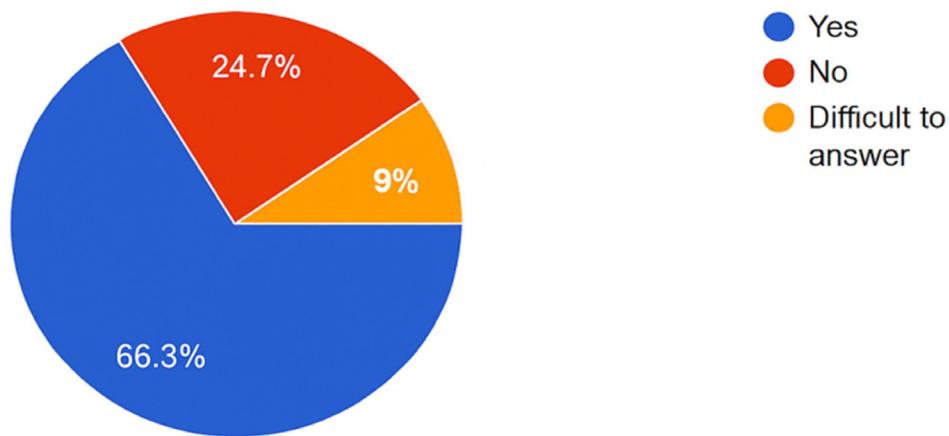

**Figure 1: Result on question 6 of the questionnaire**
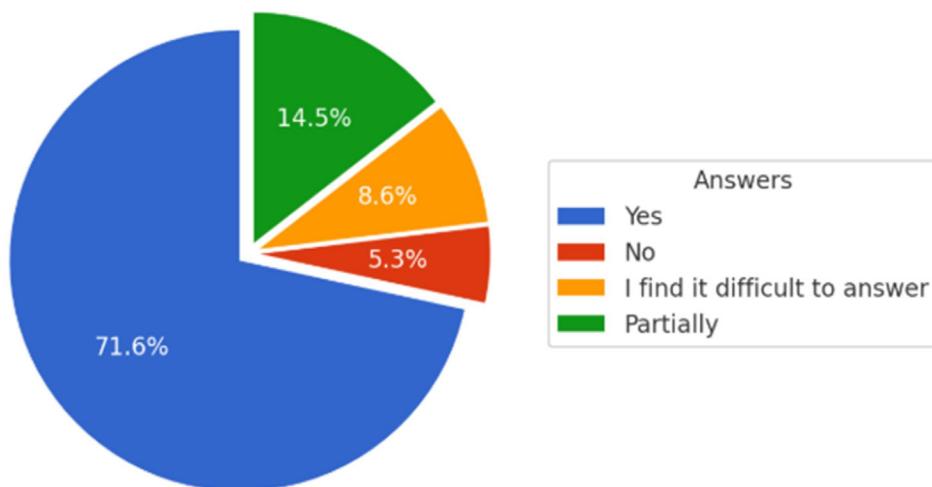
Figure 2: Result on question 12 of the questionnaire

During the survey, we also examined the problems and difficulties future primary school teachers might face when using new technologies, and obtained the following results.

According to the survey, 76% of participants confirmed the following criteria in the formation of professional autopedagogic competencies among future primary school teachers:

- has sufficient knowledge in general education disciplines and applies it when making professional decisions;

- understands the basic provisions of social sciences and uses regulatory legal documents in professional activities;

- possesses skills of linguistic communication on general and professional topics, as well as writing skills in the context of multilingual communication;

- recognizes the social importance of the teaching profession and is ready to perform professional duties;

- develops and implements educational, cultural, and outreach programs for different groups of learners, using modern information and communication technologies; is able to work with digital tools for information and professional tasks;

- demonstrates a high level of knowledge, creativity, and adaptability in the educational process.
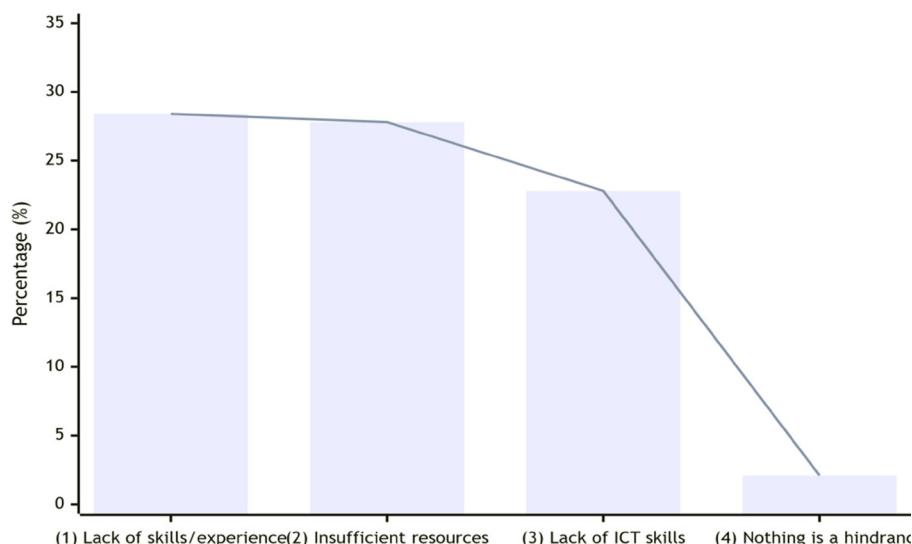
**Figure 3: Result on question 11 of the questionnaire**
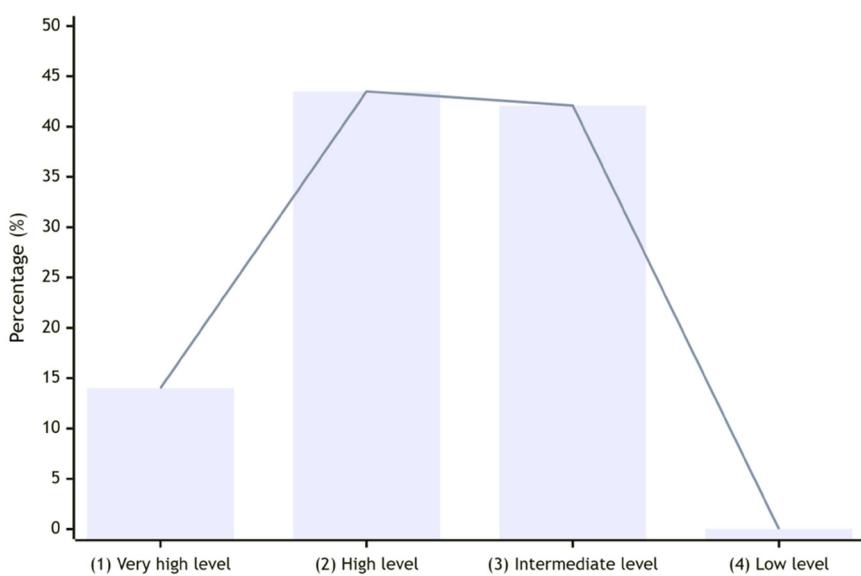
Figure 4: Result on question 20 of the questionnaire

Discussion. The findings of our study confirmed that the level of autopedagogical competence among future primary school teachers remains largely at a critical or low level. The predominance of responses such as "partially" and "no" indicates that most students do not fully understand the importance of self-education, nor have they developed sufficient skills in self-analysis and self-assessment. These findings are consistent with recent international and Kazakhstani research.

Parpieva (2023) emphasizes that the development of autopedagogical competence requires not only the recognition by future

teachers of the necessity for continuous self-improvement but also the application of scientifically grounded and methodologically sound approaches to fostering independent learning skills. These observations align with Shiian's (2000) foundational work, in which the concept of autopedagogical competence was first systematically introduced and justified as a crucial component of professional self-development in educators.

A significant contribution to the theoretical framework is found in the work of Cirali Sarica and Usluel (2022), who distinguish between associated self-education – driven by external educational institutions – and autonomous self-education, which is intrinsically motivated and self-directed. This typology is compatible with our own conceptual framework and supports the view that autonomous self-education is the higher, more desirable level, particularly when fostering reflective and creative professionals. The necessity for digital and technological integration in teacher training – central to Education 4.0 – is addressed in the systematic review by Akimov et al. (2023). Their study highlights the importance of innovation and open digital competencies. However, as our research demonstrates, students often lack these competencies, particularly in terms of applying them to personal and professional development, revealing a further area of deficiency in teacher education curricula.

An important scientific contribution of our research lies in the refinement and operationalization of the term autopedagogical competence. Building on Shiian's (2000) earlier work, we propose a broader, integrative understanding of the concept – one that includes cognitive, motivational, and reflexive components essential for lifelong learning and modern pedagogical practice. This aligns with the current educational priorities of Kazakhstan, as formalized in the 2023 Concept of Lifelong Learning (Resolution No. 248 of the Government of the Republic of Kazakhstan), which emphasizes continuous personal and professional development across all stages of education. Moreover, the international literature – particularly Brandenburg (2008) and Crespí et al. (2022) – increasingly emphasizes the importance of reflective and project-based learning as effective methods for developing meta-competencies and interpersonal skills. Our findings support this perspective, as future teachers with limited reflection skills show a corresponding deficit in their capacity for autonomous self-education.

Conclusions. This study investigated the phenomenon of autopedagogical competence in future primary school teachers. The research confirmed that the majority of students demonstrate insufficient readiness for independent self-development, self-reflection, and self-education. The goal of the study – to define and operationalize the concept of autopedagogical competence and to assess its current level among future educators – has been achieved.

The scientific novelty lies in clarifying the multidimensional structure of autopedagogical competence, encompassing motivational, cognitive, operational, and reflexive components. The practical significance of the findings is that they may inform the modernization of teacher training programs in higher education institutions. Nevertheless, the research faced certain limitations. The survey was conducted on a limited sample of students from two Kazakhstan universities, and the reliance on self-reported data may not fully reflect actual pedagogical practices. Future research should broaden the scope of participants, adopt longitudinal designs to trace the development of autopedagogical competence over time, and test the effectiveness of specific interventions such as digital learning platforms, project-based learning, and mentorship programs. Thus, this study provides both a conceptual framework and empirical evidence for strengthening the formation of autopedagogical competence, contributing to the preparation of reflective, autonomous, and lifelong learners in the teaching profession.

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Model of Formation of Deviantological Competence of the Teacher

Abstract

Introduction. The study examines the problem of developing teachers' deviantological competence. The relevance of the problem is dictated by the current situation and is associated with the growth of deviant manifestations in the behavior of adolescents.

Methodology and Methods. On the basis of a system-activity and competence approach, a model of deviantological competence was developed and a diagnosis of the current level of development of the professional readiness of teachers to interact with children of deviant behavior was carried out. The research methods included analysis, synthesis, modeling, and a questionnaire survey. *Results.* The study identified the actual level of teachers' readiness to work with children with deviant behavior: most respondents demonstrated only general knowledge and understanding, while only a small proportion possessed specific professional knowledge and skills in this area. *Scientific Novelty.* The concept of «teachers' deviantological competence» is defined, its correlation with the concept of «teachers' professional readiness to interact with children with deviant behavior» is demonstrated, the components of the studied phenomenon are determined, and a structural model is presented. *Practical Significance.* The findings reveal the need for teachers' professional development to provide effective socio-pedagogical support to children with deviant behavior.

Keywords: deviantological competence, model, professional development, teacher, children, deviant behavior, professional readiness.

Introduction. The education of the younger generation is one of humanity's timeless and pressing concerns. The problem of deviance as a social phenomenon is not new. At different stages of the development of civilization, it was associated with the categories of «norm» and «deviations from the norm», which at all times were characterized by relativity in the semantics of concepts.

In today's society, there is a noticeable increase in negative forms of deviance among adolescents and youth, which raises serious concern among the educational community and parents. Manifestations of negative deviant behavior in children cause many conflicts in the field of interaction with society, both among their peers and between adolescents and adults. Especially unproductive interaction, conflicts,

aggression interfere with learning at school and create a number of different kinds of difficulties for teachers.

Common forms of deviant behavior include bullying, aggression, cruelty, gaming addiction, suicide, vandalism, drug and alcohol abuse, among others. According to media reports in Kazakhstan, in 2024-2025, 1,867 offenses were committed by minors. The Republic of Kazakhstan is taking measures to eradicate and prevent various forms of deviant behavior that negatively impact the upbringing of the younger generation. In this context, teachers - who interact with students on a daily basis - are uniquely positioned to identify psychological distress and deviant risks at an early stage. At the same time, teachers will be able to work with children

with deviations in behavior only if their deviantological competence is formed.

The study of the essence of deviance as a social phenomenon is based on an interdisciplinary approach. The methodology for studying the problems is knowledge of philosophy, sociology, law, psychology, pedagogy, substantiating general scientific categories, exploring the essence of the concept of «deviation», «deviant behavior». The study of the essence of deviance as a social phenomenon is based on an interdisciplinary approach. The methodology for examining this issue draws on knowledge from philosophy, sociology, law, psychology, and pedagogy, which substantiate general scientific categories and explore the essence of the concepts of «deviation» and «deviant behavior». This includes theories of upbringing, social adaptation and socialization of the individual, as well as socio-pedagogical theories that emphasize the socio-cultural conditioning and complexity involved in interpreting the factors and causes of deviant behavior among minors. These foundations are further supported by the legacy of humanistic psychology.

Modern studies in social psychology on interpersonal relationships and behavioral attitudes also contribute to this body of research. Conceptual frameworks for the prevention of deviant behavior in children and adolescents are presented in works by Zmanovskaya (2021), Komlev (2020), Kleiberg et al., (2022), Rean & Konovalov (2021), Il'yankova & Semakova (2021), among others. The theory of barriers in pedagogical activity, along with scholarly investigations into professional competencies, abilities, and qualities of teachers, as well as pedagogical difficulties and errors (Grigorovich et al., 2022), and others, also play a significant role in understanding this complex issue.

Theoretical and practical significance is represented by the work of modern researchers in the field of deviantology, revealing the problems of forming the competencies of specialists who carry out professional interaction with children of deviant behavior, in publications: Kazakhstani researchers – (Akazhanova, 2022, Baimukanova, Mukhtarova, 2025, Baimukanova, Alimbaeva, Sabirova, 2020), foreign scientists (Ferris, Douglas, Keeping, Lian, 2009), (Salimi et al., 2021, Verseveld et al., 2021).

The problem of studying the interaction of teachers with children of deviant behavior in foreign theory and practice is urgent due to the fact that such forms of deviant behavior as aggression, violence, bullying, suicide, vandalism, various kinds of addictions find their common manifestation in the behavior of adolescents at school. Much attention in foreign psychological sources is paid to the problem of bullying research among adolescents and students (Zhang & Chen, 2023, Salimi, 2021) support for preschool children with difficulties in self-regulation (Clayback & Hemmeter, 2021), features of individual attributes, self-stereotypes and social projections in adolescents and youth (Seddig, 2020), aspects of the effect of physical exertion on deviant behavior among Chinese adolescents (Zhang & Qian, 2024), as well as studying the impact of family structure on adolescent deviant behavior, the intermediary role of parental control and school connections (Yang & Jiang, 2023), the relationship between parental conflict in the family and Internet gaming disorder in Chinese adolescents, as well as the mediation of this relationship by the adolescent's deviant attitude to peers and in teacher-student communication (Wang, 2023), the problem of anxiety and depression in African minors (Rossouw et al., 2024), (García, et al., 2023), norms and deviations from norms in conversations about sex between adolescents (Silva et al., 2020), and other research questions.

An interesting aspect of the study in the scientific sources of foreign authors is psychological and pedagogical research on the problem of interaction of teachers with children with deviant behavior. The study «Systematic Review and Meta-Analysis of the Effectiveness of Teacher Delivered Interventions for Externalizing Behaviors» (Aldabbagh et al., 2022) summarizes international evidence on practical teacher training aimed at working with aggressive and deviant students, and examines indicators of reduced conflict and aggression, increased empathy and prosociality

in children. Foreign publications explore the multidimensional problems of deviations and the search for ways to improve the interaction of teachers in working with children with deviant behavior. The features of the cognitive-behavioral approach are considered, high efficiency of feedback when integrating coaching programs as a strategy for increasing the behavioral competencies of teachers are considered in the article by (Reinke et al., 2018), social-emotional learning and deviant behavior (Billen et al,, 2022), factors of violence against the teacher by students (Alves, 2025), ethical teacher orientations in the field of interaction (Michvocíková et al, 2023), integration of innovative methods in the interaction of teachers and children (Bulotsky-Shearer et al, 2025) and others. Thus, foreign experience of research in different countries on the problem of interaction of teachers with minors with negative deviations in behavior is of great interest to us.

The purpose of the study is to determine the structure of the teacher's deviantological competence and to diagnose the professional readiness of school teachers to interact with children of deviant behavior.

The hypothesis of the present study is that empirical research has made it possible to substantiate special competencies in the developed structural model of deviantological competence of a teacher in order to form his readiness to work with children with deviant behavior.

Materials and Methods. The research algorithm included three stages. At the first stage, the theoretical framework of the problem was developed: contradictions were identified, the research topic, its relevance, object, subject, aim, hypothesis, and objectives were formulated.

At the second stage, the interdisciplinary and competence-based approaches to the problem of children's deviant behavior and teachers' professional readiness to interact with them were analyzed. The correlation between the concepts of «teachers' professional readiness to interact with children with deviant behavior» and «teachers' deviantological competence» was considered. Based on the competence-

based approach, a structured model of teachers' deviantological competence was developed, and its components were defined.

At the third stage, the plan and implementation of the empirical study were carried out (selection of respondents, questionnaire survey as the main method, development of questions, data processing and analysis, assessment of reliability and effectiveness, and formulation of conclusions regarding scientific novelty and practical significance).

To achieve the research objectives, theoretical methods were used: analysis, synthesis, and modeling. The main empirical methods included surveys (questionnaires), ranking, and quantitative and qualitative processing of data using mathematical statistics. The empirical study focused on diagnosing teachers' professional readiness to address negative manifestations of children's deviant behavior as an outcome of teachers' deviantological competence.

The research problem was formulated as follows: «What is the level of teachers' professional readiness to work with children exhibiting deviant behavior?».

Teachers' readiness is considered an integral concept comprising pedagogical and psychological substructures. The pedagogical substructure includes theoretical readiness (teachers' knowledge about the phenomenon of deviance, its forms of manifestation, diagnostic and correction methods) and practical readiness (developed professional skills). To study the pedagogical component of teachers' readiness to interact with children with deviant behavior, an online survey was conducted using questionnaires.

Two original questionnaires under the general title «Teachers' Awareness» were used to diagnose teachers' knowledge and skills in working with children with deviant behavior.

The first questionnaire was aimed at assessing teachers' knowledge about children's deviance. It included closed questions to determine the level of theoretical knowledge in deviantology, as well as mixed-type questions designed to identify teachers' needs for various types of support (educational, psychological, methodological and so on.

The second questionnaire was aimed at assessing teachers' skills in interacting with children with deviant behavior. It made it possible to diagnose the level of development of the following competencies:

- analytical and prognostic skills;
- design skills;
- organizational skills;
- communication skills;
- reflective skills.

The study involved 498 teachers from five regions of Kazakhstan. The teaching experience of respondents ranged from 1 to 30 years. Among the participants, there were moderator teachers (44.3%), research teachers (32.2%), and expert teachers (23.5%). Diagnostics to identify the readiness of teachers to interact with children of deviant behavior was carried out in the first half of 2025 within the framework of the project «Psychological and pedagogical conditions for the formation of professional readiness of teachers to interact with children of deviant behavior».

Results. The essence of the competence approach in the professional field expresses the concept of «competence, which combines such concepts as «professionalism, «qualifications», «professional abilities», etc.

The analysis of the concepts of «professional competence of a teacher» allows us to dwell on the definition of the essence of the category under study as the unity of theoretical and practical readiness to carry out pedagogical activities (Vvedensky, 2003, p.51). The concept of competence includes not only cognitive and operationally - technological components, but also motivational, ethical, social and behavioral» (Nikitin, 2004, p.32-33). Thus, the concept of «competence» is considered as a result of the preparation (readiness) of a specialist for various types of professional activities. The formation of competence in the educational process puts forward not the awareness of the student, but the ability to solve problems in various fields (Seer, 2005, p.43). In this regard, there is a need to clarify the concept of «professional readiness of the teacher». The representative of this approach is considered the psychologist Donald Super, combined the scientific views of

psychological theories as part of his theory of development:

- people possess and are characterized by individual abilities, interests, personality traits;
- each person, according to his inclinations, abilities, is suitable for several professions, and one profession is suitable for a number of persons (Super, 1984, pp. 6-7).

In psychology, the content of the concept of «readiness» includes the moral and psychological aspects of the teacher, his mental and theoretical abilities, a complex of socio-political and psychological and pedagogical knowledge, as well as programmatic methodological skills and skills necessary for the teacher in his activities. (Rubinstein, 2000, p.512). Professional readiness to interact with children of deviant behavior represents the basis in the structure of deviantological competence of the teacher.

An analysis of the interpretation of the concept of «deviantological competence of the teacher» allows us to note that it has not yet received proper development and is in the stage of active scientific interest of researchers in this problem in the context of preparing teachers for the difficulties arising in modern reality in interacting with adolescents with deviant behavior. The term «deviantological competence» relatively recently appears in the works of scientists: psychologist (Kleiberg, 2020), dealing with the problem of juvenile deviantology, publications by (Grigorovich, Gorelov, Chudakov, 2022, Vyshinskaya, 2014), in which the studied definition is interpreted in the context of the professional activities of a teacher - a psychologist as a necessary component of his professional development as a specialist. The study of the concept of deviantological competence is reflected in modern research (Drozdova, Koshenova, 2022, Grosheva, 2014). The structure and content of the deviantological competence of an employee of the penitentiary system is considered by (Tarasova, 2020).

Based on the existing approaches to modeling the structure of professional competencies, the following components of the structure of deviantological competence of the teacher can be distinguished:

1. Cognitive component (knowledge of deviantology as an interdisciplinary field of science, knowledge about deviant behavior in children, age-related and individual characteristics of adolescents with deviant behavior, causes of deviant behavior in schoolchildren, and risk factors).

2. Motivational and value-based component (motivation and readiness to work with at-risk children, psychological and pedagogical support for children with deviant behavior, responsibility for their upbringing and development, readiness to work with adolescents exhibiting signs of deviant behavior, and orientation of children toward socially accepted values).

3. Activity component (knowledge of skills and skills of diagnosing deviant behavior, skills of effective interaction with students and their parents, constructive solution of problems related to deviations of minors, skills and skills

of implementing the prevention and correction of deviant behavior).

4. Evaluative and reflective component (self-assessment of work outcomes, self-analysis and reflection, adjustment of methods and search for more effective practices based on results achieved).

5. Personal component (communication and organizational skills, self-control, conflict resolution abilities, empathy, and emotional and stress resilience).

The system-activity approach allows us to reflect a structural model in which its components are interconnected and influence each other, representing the basis for the effective formation of the teacher's deviantological competence. A schematic structural model of the formation of a teacher's deviantological competence is presented in Figure 1.
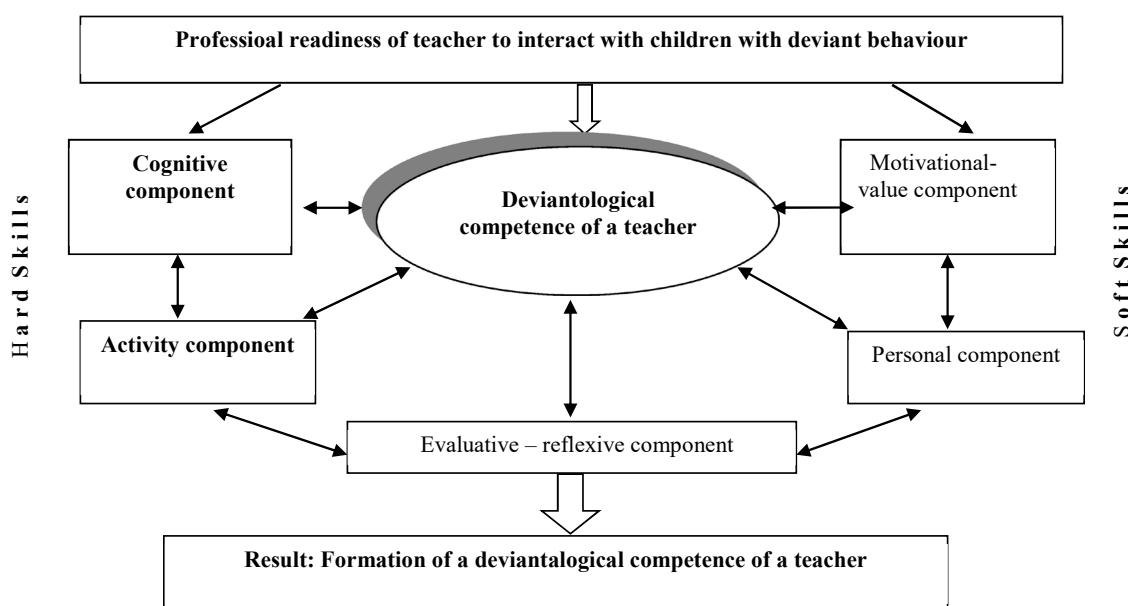

Figure 1: Structural Model of the Formation of Teachers' Deviantological Competence

Thus, the teacher's deviantological competence represents the professional and personal characteristics of the teacher, which determine his readiness to interact with children of deviant behavior, contributing to the solution of complex tasks in the field of preventing and correcting deviations in their behavior.

Empirical research was aimed at identifying the teachers' readiness for professional

interaction with negative manifestations of the teacher's deviant behavior of children and adolescents and competencies in the developed structural model of the teacher's deviantological competence.

During the assessment of teachers' knowledge of the features of interaction with children of deviant behavior, the following indicators were identified, presented in Figure 2.
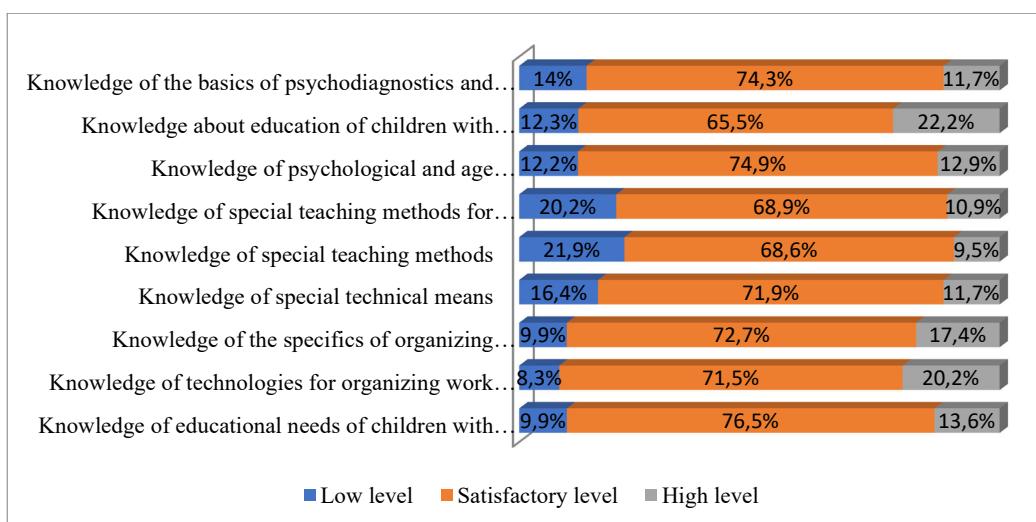
Figure 2: Indicators of the formation of teachers' knowledge about deviations and features of interaction with children of deviant behavior

In general, the assessment of teachers' knowledge in the field of interaction and work with children of deviant behavior made it possible to conclude that the majority of respondents have general ideas and knowledge in the field of work with deviant children, only a small part of teachers have specific subject knowledge. Also, the pedagogical component of teachers' readiness to interact with children of deviant behavior includes an indicator of the formation of skills.

The survey revealed the following indicators of the formation of teachers' skills, presented in Figure 3.
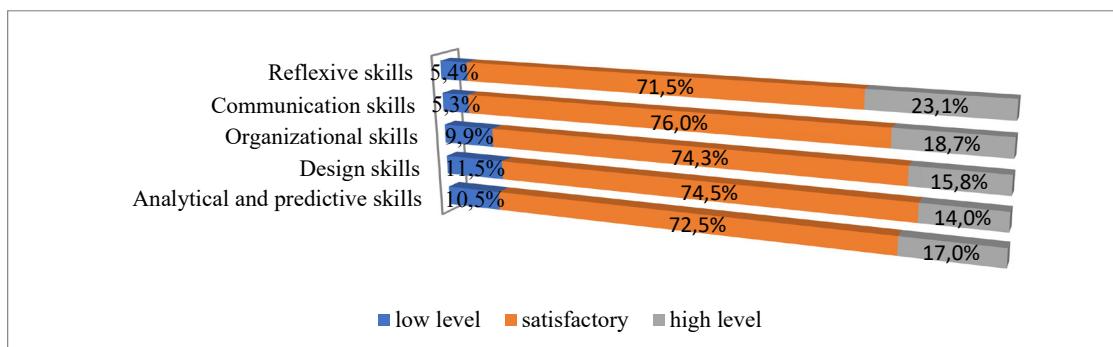
Figure 3: Indicators for assessing the level of professional skills of teachers

In general, the analysis of the survey results revealed a high need among teachers to obtain practical knowledge and form skills in communicative, prognostic, indicative, organizational work and the provision of effective and timely socio-pedagogical assistance to children and adolescents with deviant behavior. The present study revealed the level of actual development of teachers' readiness to interact with children of deviant behavior.

Discussion. In accordance with the structural components of a teacher's deviantological competence, we carried out an interpretation of the obtained results.

The study revealed that the cognitive component of deviantological competence among teachers is represented as follows: 76.4% of the surveyed teachers possess a satisfactory level of knowledge regarding the basics of psychodiagnostics and the main signs of deviant behavior in children; 13.6% of

teachers have a high level of knowledge in this area, while 9.9% lack the necessary knowledge in this field. 71.5% of teachers have a general understanding of what education for children with deviant behavior entails and how it differs from education for other categories of children. 20.2% of teachers have a clear understanding of the characteristics of the educational environment for this category of children, while 8.3% of teachers have no understanding of how the educational environment for children with deviant behavior differs from that for children without such behavior.

The majority of teachers 72.5% have a satisfactory level of knowledge about the psychological patterns and characteristics of age-related and personality development of children with deviant behavior. 17.4% of teachers demonstrate a high level of knowledge in this area, while 9.9% do not have knowledge in this domain.

71.9% of teachers possess a satisfactory level of knowledge about methods of psychological and didactic design; 16.4% demonstrate a low level of knowledge in this area, and 11.7% have a high level of knowledge on the subject.

68.6% of the surveyed teachers have a general understanding of specialized teaching methods for children with deviant behavior. 21.9% of teachers lack knowledge of specific methods that should be used when working with children with deviant behavior, while 9.5% have a clear understanding of the features and application methods of specialized techniques for this category of students.

A majority of teachers 68.9% have a satisfactory level of knowledge about special technical tools used when working with children with deviant behavior. 20.2% of teachers report a low level of knowledge in this area, and only 10.9% report a high level of knowledge. 74.9% of surveyed teachers have a satisfactory understanding of the peculiarities of organizing interactions among children; 12.9% have clear and specific ideas about the interaction process for this category, while 12.3% lack knowledge and understanding in this area.

65.5% of teachers have a general idea about the methods of working with parents of children with deviant behavior. 22.2% have a clear and specific understanding of how to work with such parents, while 12.3% do not know or understand how to organize this work. A large portion of the surveyed teachers 74.3% have a satisfactory level of knowledge about the specific educational needs of various categories of children. 14% report a low level of knowledge in this area, and only 11.7% of teachers have a high level of knowledge about children with various types of deviant behavior. As part of the survey, teachers indicated that they need practical knowledge in the field of deviant behavior (44.3%), including medical and psychological knowledge (developmental psychology, family psychology, social psychology). Many would like to engage in experience-sharing (33.7%) and expressed a need for professional development in the areas of behavioral diagnostics and correction for children with deviant behavior (22%), as well as in working with families of such children.

The activity and motivational-value component is reflected in the framework of analytical and prognostic skills of the majority of teachers surveyed, namely 72.5%, in general, can analyze the behavior of children, but are difficult to assess specific manifestations, they use general knowledge of deviations to solve methodological problems, without going into specific features of deviation, they tend to analyze concrete situations, but do not always take into account the results of the analysis in the process of substantive interaction with deviant children, which can lead to conflicts, generally analyze the achieved results of children with deviations, are able to give a general forecast of the socio-psychological development of the child without taking into account the specific manifestations of deviations, which affects the effectiveness in the formation of a further educational route.

17% of teachers are able to analyze and evaluate the behavior of children with deviant characteristics, use subject-specific knowledge that takes the nature of deviance into account, and are able to analyze situations and apply this information to build safe and constructive interactions with this category of children. These teachers demonstrate a high level of

skill in forming educational routes based on the child's current level of development.

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14% of teachers are capable of clearly planning and designing lessons, have specific criteria for evaluating learning outcomes, set concrete objectives, select appropriate conditions for their implementation, and use targeted methodological tools to work with children displaying deviant behavior. Among the surveyed teachers, 11.5% reported difficulties in organizing the learning process for this category of children. These teachers struggle with lesson design and evaluation and use a limited range of tools.

The manifestation of the personal component of deviantological competence is observed in most of the surveyed teachers within the framework of communication and organizational skills. So, for example, 74.3% of respondents are capable of managing children's behavior and activity in non-conflict situations where deviant manifestations are not prominent. They generally make quick decisions in non-standard situations, though these decisions are not always effective. They possess the ability to organize dialogic interaction but do so only within the child's role as a "student." They deliver instructions clearly and concisely but not always in language accessible to children with deviant behavior, as they tend to focus more on students without such deviations. They are capable of creating a corrective environment but use only a limited range of resources available in the educational space, which affects the effectiveness of their corrective efforts.

15.8% of teachers are able to manage the behavior and activity of this category of children in any situation. They are quick and effective in responding to non-standard scenarios, capable of building a dialogue with the child that takes into account both the child's and the teacher's possible roles and positions. These teachers deliver material in a clear, concise, and understandable manner for all categories of students, create an effective

corrective environment, and utilize all available educational resources- this minimizes risks in teaching and interaction with such children.

9.9% of the respondents are unable to manage the behavior and activity of children with deviant behavior and tend to overlook certain manifestations. They experience difficulties in establishing dialogic interaction and prefer to formalize communication in the form of a monologue, where the teacher remains the only active participant. They struggle to deliver assignments clearly and face significant difficulties in creating an effective corrective environment.

In terms of communicative skills, the majority of surveyed teachers (76%) tend to build interaction with children considering their age characteristics but without analyzing the specifics of deviant behavior. They rely on a fixed, templated set of tools for interaction and experience difficulties in assessing changes in children's psychological states at different stages of communication. These teachers are, however, generally able to plan and implement interactions with parents and other participants in the educational process.

24% of teachers demonstrate high levels of communicative competence. These teachers build interaction based on analysis of both the developmental and psychological features of children, while also accounting for the specifics of deviant behavior. They use a wide array of tools to personalize the learning process. Such teachers are skilled at accurately perceiving and interpreting children's signals, allowing them to recognize changes in behavior and emotional states based on external signs. They emphasize effective communication not only with children but also with parents and other stakeholders in the educational environment.

Another 5.3% of teachers show low levels of communicative competence. They are not inclined to use an individualized approach in communication with children, have difficulty recognizing changes in children's behavior, and rely on a limited set of tools for organizing interaction. These teachers are also less likely to involve parents or other participants in the educational process during communication. The types of support that teachers report needing are graphically represented in Figure 4.
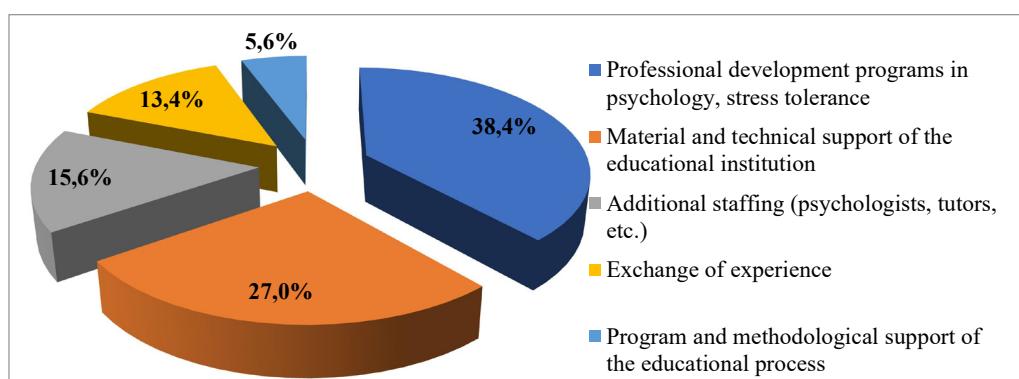
Figure 4: Priority Types of Support for Implementing an Inclusive Approach in the Education of Children with Deviant Behavior

Thus, all structural components of teachers' deviantological competence are interrelated in their professional activities, as shown in Figure 1. The results obtained in the course of the study have theoretical and practical significance for determining the structure of deviantological competence of the teacher and identifying the needs of teachers in educational and methodological support in the field of interaction

with children with deviant behavior. Overall, the analysis of the survey results revealed a high demand among teachers for acquiring practical knowledge and developing skills in communicative, prognostic, orientational, and organizational work, as well as in providing effective and timely socio-pedagogical support to children and adolescents with deviant behavior. The present study made it possible to

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identify the current level of teachers' readiness for interaction with children exhibiting deviant behavior.

In the study, there were limitations in the fact that during the survey it is difficult to determine the level of influence of the methods of teaching specific subjects taught by the teacher at school on his interaction with children prone to deviant behavior, since the respondent teachers have different methods and subjects of study.

The problem of the development of deviantological competencies of the teacher in scientific sources is not disclosed at the proper level, as well as the concept of "deviantological competence", its structure. The prospects for the direction of this study are seen in the study of delinquent and autodestructive behavioral disorders, which represent the most dangerous types of deviant behavior of adolescents and youth for society and the personality itself.

The results of the study on identifying teachers' professional readiness to work with children with deviant behavior showed that teachers have already consciously strengthened their focus on knowledge and skills for working with at-risk students, as well as on developing strategies to address their problems within the school's pedagogical process. Many teachers also noted that due to lack of time and heavy workload related to teaching their subjects, it is not always possible to put into practice their aspiration to acquire knowledge in the field of deviantology through self-education. Teachers expressed a need for professional development courses, training, and coaching to enhance their knowledge and skills in deviantology, prevention of deviant behavior, and providing psychological and pedagogical support to students.

Deviantological competence is a component of a teacher's overall professional competence. In international literature, comprehensive studies of deviantological competence or professional readiness to work with students with deviant behavior are still absent, which limits the possibilities for comparative analysis. However, the use of equivalent categories such as teacher professional competence, professional development, 21st-century teacher

competencies, and classroom management highlights the relevance and importance of the issue.

The professional competence of teachers can be understood using two models. The first model shows that professional ability can increase curriculum resiliency, stimulate student ability, and improve teacher education methods. The second model focuses on developing teacher careers to meet student needs (Yue & Ji, 2020, p. 4). At the same time, the researchers emphasize that there is no sufficient discussion in the literature of what constitutes the professional development of teachers (Yue & Ji, 2021, p.5). Attitude development refers to the formation of teachers' attitudes in their work, while functional development refers to the transformation of their intelligence and motivation. In our opinion, these models correspond to the professional and personal component of deviantological competence.

Emmerova (2025) highlights the role of teachers, who are required not only to demonstrate professionalism but also to be prepared to work with at-risk groups of students displaying aggression, anxiety, addictive tendencies, and other issues. She argues that the prevention of socio-pathological phenomena becomes a key element of the pedagogical process. Behavioral deviations from socially accepted norms such as aggression, impulsivity, disobedience to adults, and communication difficulties with peers and teachers are often referred to in international sources as «destructive» or «externalizing behavior». We believe these concepts correspond to deviant behavior in essence, though with some distinctions. Aldabbagh et al., (2022), in their systematic review and meta-analysis, confirmed the effectiveness of teacher-led interventions for addressing children's externalizing behaviors. Their findings reinforce the importance of teacher interventions when working with such students.

The results of our study also revealed a strong need for educators to teach various forms and methods of interaction with students exhibiting deviant behavior, which is the next task of the pedagogical experiment. However,

unlike in-depth longitudinal studies, the aim of our empirical study was to identify the current level of professional readiness of teachers as the first step towards developing deviantological competence as an outcome of the study.

A review of the pedagogical literature on this issue notes a study of the professional readiness of future teachers to work with children showing aggressive behavior (Istrofilova, 2019). The theoretical model of professional competence of teachers as educators of children and adolescents with deviant behavior is considered (Grosheva, 2014). The concept of "deviantological competence of future educational psychologists" is used in Russian studies (Grigorovich, Gorelov and Chudakov, 2022, Drozdova and Koshenova, 2022, Vyshinskaya, 2014).

The difference between our study and earlier work is that they do not represent the model of competence under study. The difference between our study and earlier publications is that they do not represent a model of educator deviantological competence. There is a definition of deviantological competence from a psychological standpoint in the following interpretation.

Deviantological competence of a teacher is an integrative concept that presupposes the formation of an internal conceptual model of a teacher, free from professional destruction, with a high level of psychological, pedagogical and legal professional readiness, including a structured system of knowledge about deviant behavior, determined in an effort to ensure readiness for interaction, problem solving and constructive relationship with children predisposed to deviant behavior.(Vyshinskaya, 2014). This study has developed a structural model of deviantological competence, which is a contribution to the development of the studied competence necessary for the professional growth of teachers in the modern period.

But it should be noted that some aspects in the results obtained are similar to the experiment of Russian researchers (Drozdova, Koshenova, 2022), who conducted an aerobatic study with active teachers and psychologists and reported that the results of social teachers

and psychologists are higher than those of subject teachers. The same fact was observed in the results obtained in the present study. Social educators and school psychologists surpassed subject teachers in professional knowledge and skills in the field of deviantology, prevention of deviant behavior of children and adolescents, since their educational program at the university included the study of educational disciplines, such as deviantology, psychology of deviant behavior, etc., which studied the socio-pedagogical and psychological problems of children and adolescents due to their professional orientation. At the same time, a different sample of the number of respondents (498 teachers in this study and 49 teachers from Russian researchers) significantly affects the results obtained.

The scientific novelty of this study is supported by the fact that the issue of developing teachers' deviantological competence has not been adequately addressed in existing research, nor has the model itself or its structural components been fully elaborated. The results of the empirical study revealed gaps in teachers' knowledge and skills, which will serve as a basis for the development of professional training programs, refresher courses, and educational-methodological support.

The limitations of the study relate to the difficulty of determining, within the survey, the extent to which teachers' subject-specific instructional methods affect their interaction with students at risk of deviant behavior, as the respondents represented diverse subjects and pedagogical approaches. Future research directions include the study of behavioral disorders of delinquent and self-destructive types, which represent the most dangerous forms of deviant behavior among adolescents and youth both for society and for the individual.

Conclusions. Deviant behavior in children and adolescents is a problem studied across many social sciences; however, pedagogy is primarily concerned with preventive measures and effective educational tools to combat manifestations of deviance. As the analysis of the deviant behavior of children and adolescents

shows, the causes of negative deviations are diverse: family dysfunction, aggression stemming from unhealthy dependence on gadgets and drugs, gamification, uncomfortable peer relationships, low or inflated self-esteem, and numerous other social and psychological influences. Reducing the growth of deviant behavior among schoolchildren and, more broadly, eradicating such tendencies in children and adolescents is possible through the efforts of educators who are engaged and sensitive to the challenges facing Kazakhstani society. The modern educational environment places significant demands on both the personal qualities and professional competencies of educators. Continuous professional development and the acquisition of new knowledge and skills across various domains have become essential. In this regard, one of the pressing issues in contemporary pedagogy is the development of teachers' deviantological competence. It is necessary to constantly improve and acquire new knowledge and skills in connection with new challenges of the time. Currently, one of the pressing problems of modern pedagogy is the deviantological competence of the teacher. To foster this competence, it is necessary to create opportunities for advanced training and professional retraining that take into account the needs and characteristics of today's educational landscape. The results of this study highlight the need to enhance teachers' deviantological competence across its key structural components: cognitive, motivational-value, activity-based, evaluative-reflective, and personal.

The development and implementation of an educational program for advanced training of teachers "Professional interaction with children of deviant behavior: a competence approach" in the amount of 72 hours can help to eliminate gaps in the knowledge and skills of teachers about deviant behavior of children and adolescents. The purpose of this program is the formation of deviantological competencies of teachers necessary for the diagnosis, prevention and overcoming of negative deviant deviations in the behavior of children and adolescents, as well as the use of effective and innovative methods, impact strategies that contribute to the successful social socialization of schoolchildren. In this regard, the task of developing educational and methodological support for the process of interaction between teachers and children of deviant behavior becomes the next stage in the fundamental study of the project we are implementing, after which it will be possible to assess the effectiveness of the developed educational program aimed at increasing the levels of deviantological competence of school teachers. Solving such an important problem will undoubtedly contribute to increasing the competency of school teachers to interact with children who are prone to negative manifestations of deviant behavior, as well as creating favorable conditions for the development of children, a comfortable safe environment at school and, in general, moral improvement of society.

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