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PROFESSIONAL STANDARDS AND EDUCATIONAL PROGRAMS: ANALYSIS OF PEDAGOGICAL CORRESPONDENCE

Abstract

The article presents the results of a study analysing the compliance of the content of educational programs in pedagogical universities for primary school teacher training with the norms of the Professional Standard for Teachers. The research aimed to identify «problem areas» in the content of teacher training educational programs and develop recommendations for stakeholders on improving continuous pedagogical education. A quantitative content analysis method was applied to analyse the programs. Based on the teacher standard competency framework, a table of frequency factors for compliance was developed. Using this research tool, educational programs from national, and regional universities, and a pedagogical institute in a monocity were studied. The study has limitations regarding the testing of a single assessment tool and the number of programs presented. The research results indicated that the program from the national university had the highest compliance with the teacher standard norms. Moreover, knowledge components significantly dominate educational programs. The content of educational programs revealed that professional teaching and development competencies of teachers have low-frequency indicators according to the Professional Standard norms. Based on the data obtained, recommendations were developed for stakeholders to further improve continuous pedagogical education.

Keywords: professional competencies, pedagogical education, standard, educational programs, content analysis.

Introduction. Issues related to the quality of pedagogical education and the effectiveness of teachers have become increasingly important in recent years. Global initiatives are being undertaken worldwide to improve the quality of pedagogical education through the transformation of state policy, the improvement of the content of training, retraining, professional development, and evaluation of teachers. In the face of global challenges to the education system, its quality wholly depends on the level of professional competence of teachers (Sabharwal et al., 2024). In Kazakhstan, the requirements for the professional competency framework for teachers are defined by the Professional Standard, developed as a norm specifying the requirements for qualification levels, competencies, content, quality, and working conditions (Prikaz, 2022).

The new version of the Professional Standard for Teachers, approved in 2022, provides a general description of the professional activities of teachers, including a competency framework. This framework consists of four professional components: values, knowledge, practice, and development. The Professional Standard also serves as the foundation for developing educational programs for teacher training. Research by Ingvarson, (2019); Alreshidi et al., (2024); Nawab et al., (2021); and Pedaste (2019) has shown that standards constructively influence teacher training processes when developed and used as a strategic position, guiding the description of the ideal teacher. In this regard, ensuring the quality of teacher education is essential worldwide.

In Kazakhstan, efforts are being made to provide the education sector with practice-

oriented pedagogical staff based on a competency-based approach to developing and implementing educational programs (Koncepciya, 2022). However, the issue of the alignment of teacher training program content with the norms of the Professional Standard remains underexplored. At the same time, research (Fan, 2023) has shown that the level of competency of the teacher determines the learning outcome of the students. Based on the results obtained, it is possible to develop recommendations for updating teacher training programs and further improving teacher education.

To address this task, a content analysis of programs was conducted to examine the frequency of using keywords related to the professional competencies of the Teacher Standard. The study aimed to identify «problem areas» in the content of teacher training programs and to develop recommendations for further improving teacher education. The research tasks included the following stages: developing the research methodology and tools, selecting educational programs from pedagogical universities, conducting content analysis and processing the data, conducting a comparative analysis, and, based on the research results, developing recommendations for stakeholders to improve domestic continuous teacher education.

Materials and methods. The main research questions were as follows: To what extent do universities follow the Professional Standard for Teachers when developing teacher training programs? and What 'problem areas' exist in the context of university programs?

To identify «problem areas» in developing educational programs in the national context, programs from three pedagogical universities were selected and developed for the 2023-2027 period (*national, regional, and monocity*).

According to the Order (Prikaz, 2018), one field of study was selected for the research - 6B013 Teacher Training without Subject Specialization (Primary Education). The analysis focused on bachelor's degree programs for primary school teachers. It is noteworthy that one of the programs presented for analysis was developed within the framework of the Ministry of Science and Higher Education of the Republic of Kazakhstan's «Education Modernization» project.

To analyse the content of the educational programs, a quantitative research method was chosen, based on content analysis of the educational programs' alignment with the norms of the Teacher Standard (Prikaz, 2022). The analysis included interpreting the context or meanings of key terms, counting their frequency of use, and analysing statistical data to identify patterns and trends in the use of the analysed units.

The appropriateness of using the content analysis method is justified by working with large volumes of textual material based on semantic categories (Rodrigues, 2021); the accuracy and objectivity of this method through a unified approach to analysing the educational program (Bulatbaeva et al., 2013); and structuring information based on methodologically grounded criteria and their indicators (Sergienko, 2021). In the process of content analysis, categories and contexts were examined, and statistical counting was performed. The study included coding the document to understand the meaning, significance, and interconnection of various elements of the text. The content analysis involved statistical counting, which allowed for measuring the frequency and prevalence of the categories analysed. The choice of research method was based on the theoretical foundations of the competency-based and constructivist approaches, which are focused on the learning outcomes of future teachers.

The application of content analysis is based on methodological principles such as systematicity, scientific validity, and objectivity. The principle of systematicity is reflected in the set of structured and interrelated elements: the methodological principles of the study; the scientific framework, including the goal, objectives, methods, and stages of the research; the research tools; and the Professional Standard for Teachers. The principle of scientific validity is based on the study of the achievements of national and international scientific literature,

as well as on positions corresponding to facts and current data. The principle of objectivity considers the possible factors and conditions influencing the course of the research and relies on scientific data and information obtained during the study. The principle of objectivity leads to well-founded conclusions supported by arguments.

Guided by these methodological principles, the following factors were considered during the content analysis:

For the analysis of educational programs, the content/description of the disciplines and learning outcomes were selected from the document, while the other sections of the program were excluded;

When phrases were repeated within the context of the same learning outcomes or discipline, the repeated phrases were removed, meaning the number of keywords were summed without duplication;

The identified keywords were selected within the semantic content of the relevant context according to the indicators of the teacher's professional competencies.

At the beginning of the study, keywords were identified in the textual context of the professional competencies of the Teacher's Standard to develop a coding table by categories and indicators. The importance of the location of keywords in the context of the textual material chain was considered when developing the research tools (Bryman et al., 2009; Mayring, 1994). The development of the content analysis tool was based on the Framework of Professional Competencies of the Teacher in the Professional Standard (Prikaz, 2022). The developed table of frequency factors for the compliance of the educational program with the norms of the Professional Standard for Teachers includes parameters such as competencies, criteria, indicators, and keywords (Table 1).

Table 1. *Table of Frequency Factors for the Compliance of the Educational Program*

Professional Competencies of the Teacher *(Analysis Categories)*	Criteria *(Subcategories of Analysis)*	Indicators *(Units of Analysis)*	Key Words* *(Units of Count)*
1) Professional Values	1.1 Commitment to the Teaching Profession	1.1.1 Shows belief in the ability of all students to achieve educational goals	a) educational goal
			b) student achievement
			c) belief
		1.1.2 Demonstrates dedication to the teaching profession	a) teaching profession
			b) dedication
			c) professional identity
		1.1.3 Adheres to current legal regulations in their activities	a) legal regulations
			b) standard
			c) program

The process of analysing educational programs begins with the systematic organization of data by defining semantic units using the frequency table. At this stage, a substantive structuring of the studied material is carried out, implying a structural content analysis of the terminological relationships in the text (Bryman et al., 2009). The units of analysis were studied within the context of the semantic part of the text, which expanded the understanding of the essence of the studied phenomena (Rodrigues, 2021); a structuring was carried out that allowed the evaluation of the content of educational programs based on set parameters through the analysis of the studied units (Sergienko, 2021).

To determine the frequency of concept usage in the text, a conceptual type of content analysis was chosen, which involves statistical counting of identified numerical patterns during the analysis of textual data, followed by their substantive interpretation (Hsieh & Shannon, 2005).

After the content analysis, the data is interpreted to describe and summarize the content of the programs and to identify patterns between the teacher's professional

competencies, their criteria, and indicators that form the document's content.

To determine the frequency levels of keyword usage (high, medium, low), the arithmetic mean (x) is calculated using formula (1), where a is the sum of the indicators, and b is their number:

$$\frac{a+b}{2} = x \quad (1)$$

To determine the threshold for a low level, we assume that the low level of keyword usage should be below the average level (<c), and the medium level should be equal to or above the average (=<c).

When determining the threshold for a high level of keyword usage (f), formula (2) is used, where y is a high indicator and x is the arithmetic mean:

$$\frac{y+x}{2} = f \quad (2)$$

During the counting, a high-frequency indicator of keyword usage in the program indicates a sufficient level of the program's focus on developing the corresponding professional competence in students, compared to other programs. Conversely, a low-frequency indicator of keyword usage signifies an inadequate level of focus on developing the corresponding competence in future educators.

Results. The study of the programs was conducted in three aspects, with the categories, subcategories, and units of analysis being: professional competencies (analysis categories); criteria for professional competencies (analysis subcategories); and indicators of professional competencies (units of analysis).

Categories of Analysis (Professional Competencies). As a result of the study, the data were summarized according to the frequency of keyword usage across different universities (see Table 2).

Table 2. *Data on Categories of Professional Competencies of the Teacher*

		University		
		National	Regional	Monogorod
Professional Values	125	61	42	22
Professional Knowledge	181	79	49	53
Teaching Practice	92	67	17	8
Professional Development	2	2	0	0
	400	209	108	83

The aggregated data on the study of professional competencies led to the following conclusions.

The largest number of keywords across all four categories of analysis was found in the educational program of the national university. The total number of keywords in the programs of the monogorod and regional universities is almost twice as low compared to the national university program.

In all programs, the knowledge component predominates, indicating that the teacher preparation programs for primary education are highly theoretical. This is evidenced by the analysis category of professional knowledge exceedingly twice the category of teaching practice. Considering that «a third of teachers in Kazakhstan lack subject knowledge and teaching methodology according to assessments of teachers' knowledge» (Ahmetjanova et al., 2023), it can be asserted that the teacher preparation programs in Kazakhstan and their implementation require significant revision and updating.

Content analysis revealed the absence of keywords related to the professional development of future educators in the programs. However, the issue of continuous professional development for teachers is relevant worldwide (Nawab et al., 2021). The Professional Standard for Teachers in Kazakhstan has been developed with requirements for professional growth in mind. It is presented as a set of norms defining the necessary competencies for teachers at

each stage of their professional career and a roadmap indicating further directions for their professional development (Prikaz, 2022). Continuous professional development for teachers involves qualitative growth from a «trainee teacher» model to a «master teacher» capable of leading initiatives to assess and improve subject content and teaching strategies based on research results, as well as transferring their experience and supporting colleagues. Foundations of motivating future educators towards continuous professional development should be established during their training. Therefore, indicators of a teacher's professional competence in professional development should be reflected in teacher preparation programs.

To compare the obtained data, an analysis was conducted based on the results of the annual ranking of university educational programs by the National Chamber of Entrepreneurs «Atameken» for the years 2019–2022. In the ranking, all criteria are divided into three blocks: career prospects of graduates, quality of educational programs, and achievements of students (Masanov, 2021). The quality of educational programs in the Atameken ranking is studied according to several criteria, including «compliance of content with labour market requirements» (assessed by the relevance of lecture topics and used sources) and «compliance of learning outcomes with industry standards and/or employer requirements» (assessed by the relevance of learning outcomes and the alignment of studied topics with achieving learning outcomes) (Masanov, 2021).

According to the ranking data for the educational programs of the universities under consideration for the years 2019–2022, there is a slight positive trend in the quality of educational programs at the national university and the university in the mono-city in 2021 and 2022. It is also worth noting the positive trend in career prospects for graduates of the national university, which indicates a clear focus of this educational program on improving the quality of training for primary school teachers. The comparative results based on the Atameken ranking indicators confirm the findings of this study regarding the greater focus of the national university's educational program on improving teacher preparation quality.

Analysis Subcategories (Criteria for Professional Competencies of Teachers). According to the conducted research on the frequency of key terms used in 14 criteria for professional competencies of teachers, cumulative indicators ranged from 0 to 98. The average value for determining the levels of frequency of key term usage was found to be 28.57. Accordingly, a low level is <28.56, while a medium level is ≥28.57. To calculate the boundary for a high level: (98+28.57)/2=63.29.

The boundaries are defined as follows: high level – from 63.29 to 98; medium level – from 28.57 to 63.28; low level – from 0 to 28.56. Thus, the results of the study are distributed as follows: Knowledge criteria for professional competencies have a high level of frequency of key term usage in the programs; civic position (professional value) and teaching process planning (teaching practice) have a medium level, while other criteria have a low indicator (see Table 3).

Table 3. *Data on the Criteria for Professional Competencies of Teachers*

Professional Competencies	Criteria	Total	%
1. Professional Values	1.1 Commitment to the Teaching Mission	27	6,75
	1.2 Civic Position	42	10,5
	1.3 Adherence to Professional Ethical Standards	10	2,5
	1.4 Responsibility	23	5,75
	1.5 Initiative	23	5,75
2. Professional Knowledge	2.1 Knowledge of Children's Characteristics and Application in Practice	83	20,75
	2.2 Knowledge of the Subject, Teaching Methodology, and Evaluation	98	24,5

3. Teaching Practice	3.1 Planning the Teaching Process	39	9,75
	3.2 Creating a Safe Educational Environment	21	5,25
	3.3 Implementing Instruction	7	1,75
	3.4 Assessing Students	13	3,25
	3.5 Collaboration	12	3
4. Professional Development	4.1 Reflection	2	0,5
	4.2 Self-Development Management, Leadership	0	-

Less than 5% frequency of key term usage was found for the following criteria of professional competencies, in descending order:

3.4 Assessing Students (3.25%)

3.5 Collaboration (3%)

1.3 Adherence to Professional Ethical Standards (2.5%)

3.3 Implementing Instruction (1.75%)

4.1 Reflection (0.5%)

4.2 Self-Development Management, Leadership (0%)

Analysis Units (Indicators of Professional Competencies of Teachers). According to the research on 51 analysis units (indicators of professional competencies of teachers), cumulative indicators ranged from 0 to 44. The average value is 7.8. Accordingly, a low level is <7.8, while a medium level is ≥7.8. To calculate the boundary for a high level: (44+7.8)/2=25.9. The boundaries for the levels are distributed as follows: high level – from 25.9 to 44; medium level – from 7.8 to 25.8; low level – from 0 to 7.7. Based on the calculation of the level boundaries, the data were interpreted into percentage ratios and are presented in Figure 1.

The research findings on the analysis of indicators of professional competencies of teachers lead to the following conclusions:

1) Professional Values: 50% of key terms are not used in the programs studied, indicating that half of the professional values are not being developed in the training of future teachers. It is necessary to update the content of modules/disciplines in primary teacher training programs, with special attention to developing professional values such as (in descending order): demonstrating belief in all students' ability to achieve educational goals; taking responsibility for students' academic success and upbringing; possessing self-regulation and stress-resilience skills; showing respect for students and their parents/legal representatives; and sharing responsibility for the educational and upbringing process within the teaching community.

2) Teaching Practice: 76.5% of key terms related to teaching practice are at a low-frequency level. In this regard, it is recommended that pedagogical universities significantly reconsider the practice-oriented nature of modules and disciplines when updating educational programs. This includes reviewing all types of practice to ensure the development of competencies such as (in descending order): achieving educational and upbringing goals in lessons; applying assessment results to improve teaching practice; creating a supportive atmosphere for each student; ensuring safe and ethical use of digital environments; motivating students to achieve high educational and upbringing results and supporting them; using teaching technologies by educational and upbringing goals, considering students' individual needs; adhering to academic integrity principles during assessment; interacting with parents/legal representatives to build individualized development paths for students; planning the educational process in line with educational and upbringing goals; using diverse assessment tools; providing timely and effective feedback on assessment results.

3) Professional Development: 99.5% of key terms related to professional development are at a low-frequency level, indicating that the development of professional growth competencies for teachers is not included in primary teacher training programs. This fact questions teachers' continued motivation for ongoing professional growth, which negatively impacts the overall quality of education.

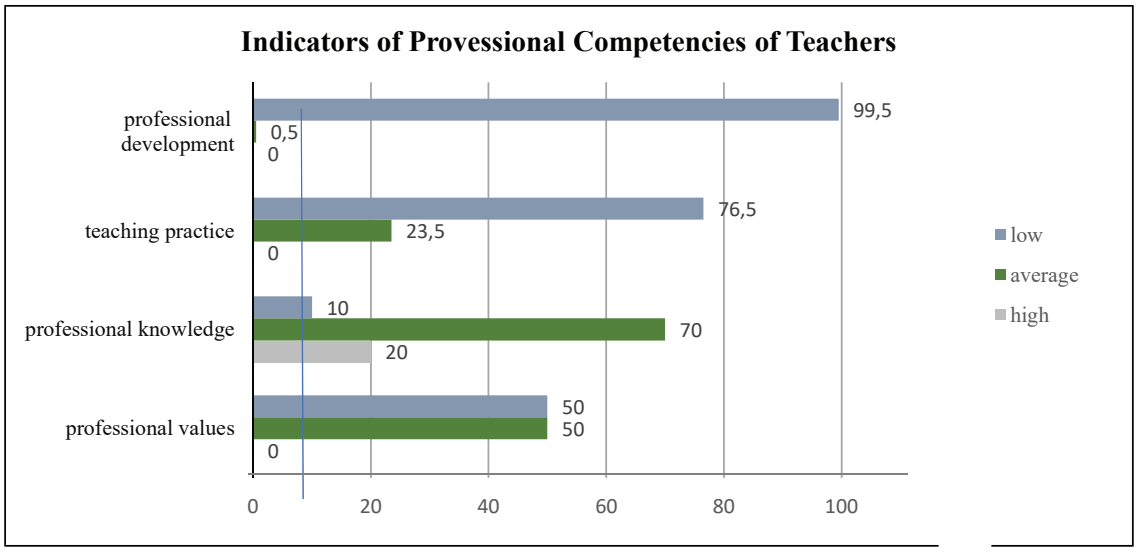

Figure 1: Data on Indicators of Professional Competencies of Teachers (%)

Discussion. This study continues the work of previous research (Shaukat, 2021; Li & Xue, 2023), highlighting the potential of standards to influence the quality of pedagogical education. By examining educational programs through the lens of key standards keywords, this study attempts to analyse how these programs are oriented toward ensuring the quality of teacher preparation. Additionally, the study adheres to the central idea of Tummons (2014), which posits that the Professional Standard serves primarily as a text, demonstrating intertextuality in its reading, dissemination, and citation processes.

This research represents an effort to develop and test a tool for assessing the quality of teacher preparation programs. We believe that the proposed methodology for analysing educational programs could serve as a roadmap for their development and evaluation (Burakgazi & Karsantik, 2023). The analysis of the programs has highlighted the existing issue of social and economic segregation (Irsalıev et al., 2020) among teachers at the stage of preparation in higher education institutions (Nousheen et al., 2024). Significant differences (more than 2 times) between the content of national university programs and those of regional and mono-city universities complicate planning and achieving sustainable development goals (Nousheen et al., 2024).

The proposed content analysis of program contents suggests that while adequate attention is given to subject knowledge and pedagogical content, the programs are insufficiently oriented toward preparing future teachers for practical responsibilities and certain skills (Al-Harthi et al., 2022; Sathasivam et al., 2024). For instance, the results of this study demonstrate a practical absence of key competency indicators related to future teachers' interactions with students' parents. Antony-Newman, (2024) underscores the pedagogical community's interest in this issue, noting that without a focus on parent involvement in teacher education, future teachers lack examples of such interactions and must demonstrate creativity in developing content for involving parents in their pedagogical practice, complicating their work.

The findings of this study, regarding the neglect by educational program developers of competency indicators from the standards, confirm a similar issue in other countries. Research by Willis et al., (2022) comparing the results of content analysis of educational programs with surveys of future teachers showed alignment with these findings. Future teachers lacked confidence in professional interactions with parents/caregivers, setting goals for students with varied experiences, implementing sequential lessons, engaging students in learning activities, and motivating them to learn.

According to the results of the Monitoring of Student Achievement (MODO) (Tynybaeva et al., 2022), it is recommended that pedagogical

universities expand opportunities for professional development for teachers, include courses on ICT and modern teaching methods, and establish closer collaboration between universities and schools regarding pedagogical practice, among other recommendations. MODO 2023 in Analiticheskii otchet, (2023) provided recommendations to regional education departments and methodological centres for organizing mutual teacher training on lesson planning, assignment development, and assessment of «weak» topics in students' functional literacy.

Based on the data obtained from the content analysis of teacher preparation programs and the studies on Monitoring Student Achievement (MODO) (Tynybaeva et al, 2022; Analiticheskii Otchet, 2023), it can be concluded that the development of competencies related to teaching practice and professional development is a nationwide issue in both teacher preparation and subsequent professional growth.

Research by Paulsrud & Nilholm (2023) and De Weerdt et al. (2024) emphasize that collaborative learning, teaching specialized educational consultations, and mixed forms of cooperation» are crucial in the professional development of educators. This highlights the importance of professional growth for teachers. However, the current practice of teacher preparation, where theoretical knowledge and pedagogical practice are implemented sequentially, does not provide novice teachers with the opportunity to reflect on their work, discuss their practical experiences with peers, receive feedback from university instructors, and apply alternative methods in subsequent school lessons (Sathasivam et al., 2024).

At the same time, from a socio-material perspective, standards are artifacts that can either intentionally direct or restrict the scope of evaluation (Ajjawi et al., 2021). These understanding positions standard as one of several tools for a comprehensive assessment of the quality of teacher education. In this context, the study has limitations related to the testing of a single evaluation tool and the number of programs analysed. In doing so, we recognize that, from a sociomaterial perspective, standards are artifacts that can purposefully guide or limit the scope of assessment (Ajjawi et al., 2021). This allows us to understand it as one of several tools for a comprehensive assessment of the quality of teacher education. In this context, the study has limitations in testing.

Conclusion. This study extends research on monitoring the implementation of the Professional Standard for Educators in educational organizations. The analysis identified the national university program as a leader in compliance with the Professional Standard for Teachers. This program contains over 50% (209 out of 400) of the total key terms. This finding is supported by the results of the independent Atameken ranking, which shows a positive trend in program quality satisfaction and career prospects for graduates. In all programs, knowledge-based components are predominant. The content analysis revealed an absence of key terms related to professional development in the programs, indicating that the programs are not aimed at developing professional development competencies for future primary school teachers.

The results obtained from the study suggest that universities should strengthen their focus on the study of criterion-based assessment, inclusive education, and self-development management. It is advisable to emphasize these areas during teaching practice. In schools, the mentoring process needs significant improvement, as does the training of young teachers in the development of methodological products and the sharing of experience. In analysing educational programs, we adhere to the view of scholars who emphasize that the effectiveness and quality of a university's activities, including its programs, are defined not only by compliance with set evaluation parameters but also by its ability to produce new values, goals, and standards in the field of education and science. In this regard, the results of the analysis do not claim to provide a comprehensive solution to existing problems. To ensure a comprehensive approach to solving issues in program development, further research may involve analysing programs in other areas of teacher preparation, including the use of multiple evaluation tools.

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DEVELOPING DIGITAL COMPETENCE IN FUTURE TEACHERS THROUGH BLENDED LEARNING APPROACHES

Abstract

This article examines key aspects of training future teachers, focusing on the challenges of digitalizing education, the integration of digital competence, and pedagogical teaching methods. The study's article selection aimed to provide comprehensive coverage, utilizing the Web of Science database through a university library system. Keywords like «education,» «innovation,» and «digital competence» were used to find relevant research across various fields. The article's relevance stems from modern society's demand for well-qualified specialists in general education institutions. Future teachers must not only acquire vast knowledge but also apply it effectively in real-world scenarios. The curriculum for the 6B01505 «Biology Teacher Training» program, including the «Methods of Teaching Biology» course, is designed to incorporate new technologies and teaching methods that engage students and enhance their competencies. To support digital education, the MOODLE platform is used for developing materials such as presentations and video lectures, which align with the course objectives. Additionally, the article explores the role of educational platforms in facilitating effective lesson management and evaluates their services and impact on student learning.

Keywords: blended learning, digital competence, digital education, digital transformation, educational environment, interactive technologies.

Introduction. In the new century, in a time of huge technological advantages, computer services and the development of communication technologies have a positive impact on education in many different dimensions. The structuring of the information age has led to the development of new educational programs new professions and various interdisciplinary fields of knowledge. In today's digital age, the possibilities of digital tools in the speed of teaching and learning in education are increasing day by day (Peretti et al., 2024). Based on diagnostics of the level