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Improving the professional competence of college students as the basis for successful teaching

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Abstract. This article reveals the problems and prospects for improving the level of professional training of future successful teachers, which should be addressed while they are still studying at college. The study aims to identify effective measures that contribute to improving the competence of teacher training (primary school teachers) in the context of secondary vocational education. To solve all the tasks set, methods of literary analysis were used, focus surveys were conducted, and students were tested. Statistical methods and analytical methods were used to summarize the results and draw conclusions. The results of the focus group survey revealed the most pressing problems, the need for professional competence development, and the main factors for success among future primary school teachers studying at the college. Measures were developed using innovative methods aimed at improving the competence of college students to prepare them to become successful primary school teachers. The effectiveness of the measures implemented was confirmed by the experimental results obtained. The final diagnostic data on subject and methodological competence indicators showed the high effectiveness of the measures taken in the experimental group, where the proportion of successful students who received maximum scores in all types of competencies increased significantly. The results of the assessment of the pedagogical success of college students also indicate the effectiveness of the measures applied and the existence of a close relationship with the level of professional competencies.

Keywords: professional competence, success, college, students, primary school teachers, subject competencies, methodological competencies.

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Introduction

The relevance of the study is based on the fact that in the rapidly developing, constantly changing society of today, changes are also taking place in the education system, where there is a growing need for highly qualified teachers who will be able to work successfully in modern schools.

Comparative analysis reveals distinctive features in conceptual approaches between Kazakh and foreign researchers. Western scholars (Darling-Hammond, 2020; Guerriero, 2022; Mayer, 2021) emphasize evidence-based pedagogical content knowledge and data-driven decision-making as core components. Kazakh researchers (Zheldibayeva, 2021; Sagitova, 2020; Kussainova, 2021; Seitakhmetova, 2021).) integrate these approaches while emphasizing the cultural-national context, multilingual competencies, and the synthesis of traditional pedagogical values with modern educational technologies. Specifically, Kazakh educational science highlights the importance of trilingual education competence, adaptation to the updated content of education, and professional competencies aligned with the National Qualifications Framework.

For future teachers, various factors are considered to be the basis of a successful teacher: professional competencies; psychological knowledge in the field of age-based pedagogy and psychology; personal qualities; organizational skills, communication skills, the ability to self-educate and self-develop; internal motivation and love for the profession. These factors form a solid foundation on which a successful teaching career is built. Based on this, the professional competence of primary school teachers becomes an important factor in ensuring the quality of education and upbringing of the younger generation. That is why the problem of improving the professional training of future successful primary school teachers in terms of more detailed study and development of effective approaches is becoming particularly relevant.

The problem of the study lies in the fact that the modern system of professional training for successful primary school teachers has many unresolved issues, expressed in the form of:

- inconsistencies between the requirements of modern schools and the level of training of college graduates;
- a lack of practical skills among novice primary school teachers;
- the limited scope of educational programs in terms of developing the necessary professional competencies;
- the low level of motivation among primary school teachers to develop the professional skills that will enable them to be successful.

These problems can be solved by introducing new approaches and methods aimed at improving the professional training of future successful primary school teachers.

The degree of research into the professional training of teachers is quite high, as they attract the attention of many researchers and practitioners. At the same time, it is important to note that a significant part of scientific and applied work is devoted mainly to problems in higher education, while issues of training primary school teachers in colleges remain insufficiently studied. This creates a need to develop special methods and approaches adapted to the conditions of training successful secondary vocational education teachers by developing their competence while studying at college.

The object of the study is college students.

The subject is the process of improving the professional training of college students.

The purpose of the study is to identify effective methods and means that contribute to the improvement of the professional competence of college students.

The objectives of the study are:

1. To analyze the provisions that determine the success of college students studying in colleges and the key indicators of their competence;

2. To identify current problems and needs in the development of professional competencies and the success of college students studying;

3. To determine the level of competence among college students;

4. To develop measures to improve the competence of college students, aimed at ensuring their success.

Research methods used: theoretical analysis of scientific, methodological, and normative literature; observation of the educational process; survey methods (questionnaires and testing), pedagogical experiment, statistical methods, and methods of analytical analysis.

Research hypothesis: if innovative methods aimed at improving students' professional competence are introduced into the college educational process, it will be possible to train more successful primary school teachers.

The research has important theoretical and practical significance, as its results can be used to improve the quality of primary school teacher training and the quality of secondary education in general.

Research base: students of the Astana Humanities College studying to become primary school teachers (4th year, 80 people).

Literary review

The professional competence of a future primary school teacher (Shustova, 2010) is defined as a set of necessary psychological, pedagogical, subject-specific, and methodological skills (knowledge and abilities) and the ability to apply them in practice (Fernandez-Batanero, 2020; Gatlin-Nash, 2021; Jing, 2024). It is determined by the specific nature of the professional activity of a teacher who is preparing to work in primary school and is characterized by a combination of theoretical knowledge and practical skills in all subjects taught to primary school students. It also depends on the following necessary indicators: the integrated and systematic unity of the cognitive and activity components of this profession: personal characteristics and the ability to communicate with primary school children; readiness to form cognitive needs and motivational and value-based attitudes in primary school students towards both academic and communicative activities; the ability to ensure the unity of cognitive, emotional, and behavioral potential in the development of the personality of a primary school student (Lindfors, 2021; Sims, 2020).

The main components of the competence of primary school teachers are psychological-pedagogical, subject-specific, methodological, and personal competencies (Zhao, 2021; Li, 2022). Other authors share this opinion (Panfilova, 2016; Asylbaeva, 2021). As noted by B. Romijn (2021), the following interdependent and interrelated functional components should be distinguished in the structure of professional training for primary and preschool teachers: goal-oriented, motivational, organizational and activity-based, content-based, and results-based. As

pointed out by Z. Zhumas (2021), such competencies can ensure the effectiveness and integrity of the process of forming successful competence in future teachers. The educational program of advanced training courses for primary school teachers (Akhmetniyazova, 2020) should also be considered confirmation of this approach.

The formation of successful competence in college students is a continuous process and consists of the gradual inclusion of future primary school teachers in educational and professional pedagogical activities. At the same time, the training process is based not only on a competency-based approach, but also on a combination of this approach with a systemic and personality-oriented approach. Each of these approaches helps primary school teachers develop the skills of a successful teacher in conjunction with all types of professional competencies (Gonzalez-Fernandez, 2023; Thompson, 2020; Zhou, 2022).

The provisions characterizing the successful professional development of teachers in the Republic of Kazakhstan in secondary vocational education institutions are regulated by a number of regulatory documents and professional standards. The Law of the Republic of Kazakhstan "On the Status of Teachers" (2019) defines the rights and obligations of teachers, the conditions of their employment and career growth.

The concept of lifelong learning (or "continuing education") (2021) guides the education system to continuously improve the qualifications of teachers at all levels to ensure their success and the development of professional competencies.

The roadmap for the development of teacher education in Kazakhstan, within the framework of the Concept for the Development of Preschool, Secondary, Technical, and Vocational Education in the Republic of Kazakhstan for 2023-2029 (Mamin, 2023), identified several problems regarding the status of teachers (insufficient level of professional competencies of teachers; insufficient level of qualifications in the development of competencies such as IT, lesson organization, emotional intelligence, critical thinking, time management, and others) and outlined a strategy for improving the training of teaching staff to address these issues. The most important factors for success within this framework are the introduction of innovative approaches to teaching, regular assessments, continuous learning, and personal development.

Materials and methods

To address the first task, a systematic literature review was conducted following PRISMA guidelines (Page, 2021). The search strategy included peer-reviewed articles from Web of Science, Scopus, and ERIC databases. Inclusion criteria: (a) focus on college teacher competence; (b) college-level training programs; (c) empirical studies with clear methodology. Exclusion criteria: (a) non-empirical papers; (b) studies focusing solely on higher education. Two independent reviewers screened 156 articles, with inter-rater reliability $\kappa = 0.87$, indicating substantial agreement.

This study employs a mixed-methods sequential explanatory design (Syed, 2025), combining quantitative assessment with qualitative exploration to ensure a comprehensive understanding of competence development among college students.

A focus group survey on current issues and needs in the development of professional competencies of future primary school teachers studying at the college was conducted to identify participants' opinions on the state of affairs, existing difficulties, and ways to overcome

emerging barriers. The participants in the focus groups were: college teachers; employers (school principals); college graduates - primary school teachers. Each group consisted of 10 people. Focus group methodology was validated through pilot testing with 5 participants from each stakeholder group. The semi-structured interview guide was developed based on theoretical frameworks and validated by three expert reviewers (content validity index = 0.89). Questions underwent cognitive interviewing to ensure clarity and comprehensiveness.

Sampling strategy employed purposive sampling to ensure representativeness:

1) College teachers: minimum 5 years teaching experience, representing different subject areas

2) Employers (school principals): minimum 3 years administrative experience, representing various school types

3) College graduates: recent graduates (within 2 years) currently working as primary school teachers

Data saturation was achieved when no new themes emerged (Guest, 2020). Focus groups were audio-recorded and transcribed verbatim. Thematic analysis followed Braun and Clarke's (2019) six-phase approach. Inter-coder reliability was established with two independent coders achieving Cohen's $\kappa = 0.82$.

The diagnostic instrument was developed following established psychometric principles (American Educational Research Association, 2014):

A panel of 5 experts in primary education and assessment reviewed all items for relevance, clarity, and alignment with Kazakhstan's State Education Standards. Content Validity Ratio (CVR) for all items exceeded 0.62, indicating acceptable content validity.

Pilot testing with 60 students not included in the main study confirmed factor structure through exploratory factor analysis. Kaiser-Meyer-Olkin measure (0.84) and Bartlett's test ($\chi^2 = 312.45$, $p < 0.001$) indicated sampling adequacy.

Cronbach's alpha coefficients were:

1) Subject competencies: $\alpha = 0.78$

2) Methodological competencies: $\alpha = 0.81$

Administered to 30 students with a 2-week interval, achieving correlation coefficients $r = 0.85$ for subject competencies and $r = 0.87$ for methodological competencies.

Significant correlations ($r = 0.72$, $p < 0.01$) between test scores and supervisor ratings during pedagogical practice confirmed predictive validity.

A randomized controlled trial design with pre-post assessment was implemented to test the research hypothesis. Random assignment was conducted using computer-generated random numbers to minimize selection bias.

Based on the pilot study effect size (Cohen's $d = 0.8$), power analysis (G*Power 3.1.9.7) indicated a minimum sample size of 34 per group ($\alpha = 0.05$, power = 0.80). The final sample of 40 per group provided adequate power.

Control for Confounding Variables:

- Baseline equivalence testing confirmed no significant differences between groups in demographic characteristics, prior academic performance, or initial competency levels
- Same instructors taught both groups using standardized curriculum materials
- Assessment blind to group assignment
- Attendance monitoring ensured comparable exposure

The tasks included in the assessment are based on multiple-choice questions, open-ended questions, and case studies. Criteria for assessing the level of competence of future teachers: optimal level: 14 to 18 points (assessment of subject-specific competencies); 11-13 points (assessment of methodological competencies); acceptable level: 10 to 13 points and 7-10 points, respectively; threshold level: 0 to 9 points and 0-6 points. Students who receive the maximum points in the development of individual competencies are considered successful.

For this purpose, two groups were created: an experimental group of 40 people and a control group of 40 people. The first group underwent training using measures to improve professional competencies with an emphasis on ensuring success in their future profession, while the second group underwent traditional training.

In addition, during the pedagogical experiment, an assessment of the pedagogical success of college students was carried out based on the results of their pedagogical practice. It is based on the same comparative approach, since the same students participate in the experiment (EG - 40 people and CG - 40 people). For an objective assessment, an expert evaluation of the results of the internship report was used, based on the professional opinion of teachers and the commission, as well as the opinion of the internship supervisor.

The study involved 80 students (40 in the experimental group and 40 in the control group) from a single institution - Astana Humanities College. Although the sample size was adequate for detecting statistically significant effects (as confirmed by power analysis), it represents a relatively small proportion of the total population of primary school teachers in Kazakhstan. The findings may not be fully generalizable to:

1) Students in other colleges across different regions of Kazakhstan, where educational infrastructure, teaching quality, and student demographics may vary significantly

2) Colleges with different resource availability, such as urban institutions like those in Astana, may have advantages in terms of technology access and qualified faculty compared to rural colleges

3) Different cultural and linguistic contexts, particularly colleges where instruction is primarily in Kazakh rather than Russian, or institutions serving minority populations

Results and discussion

The results of the focus group survey on current issues and needs in the development of professional competencies and the success of college students studying in Table 1.

Table 1. Focus group survey results (in percent)

Categories and answers to questions	Teachers	Supervisors	Students
Current issues			
Incompleteness of practical exercises	70	80	50
Difficulties of adapting newbies	50	40	60
Lack of digital tools	30	20	40
Professional competence needs			
Design and research activities	60	70	50
Work with information and communication technologies	50	60	70

Independent scientific work	40	30	50
Reflexive culture of teachers	30	20	40
Success factors of teachers			
Availability of mentoring	70	80	50
Willingness to innovate	50	40	60
Motivation for professional self-improvement	50	50	70
Regular training and professional development	40	30	50

The following issues were identified as pressing problems: the majority of the first two groups of respondents and half of the students identified the incompleteness of practical training, as insufficient practical training has a negative impact on the professional development of teachers; half of the teachers, slightly fewer school administrators (40%), and most students (60%) noted the difficulties of adapting new employees, which indicates the need to pay special attention to the adaptation of novice primary school teachers; A third of teachers, 20% of administrators, and almost half of students (40%) point to a lack of digital tools, which indicates a shortage of information technology in the educational process.

The incompleteness of practical training emerged as the most critical concern across all stakeholder groups. A college teacher with 8 years of experience emphasized: "Our students spend too much time on theoretical coursework but lack hands-on classroom experience. When they graduate, they struggle with real classroom management situations." This sentiment was echoed by a school principal who noted: "New graduates often have solid theoretical knowledge but cannot translate it into effective teaching practices immediately."

Regarding adaptation difficulties, a recent graduate shared: "The transition from college to actual teaching was overwhelming. Despite good preparation, the reality of managing 25 first-graders was completely different from what we practiced." A supervising principal added: "We notice that novice teachers need at least six months to feel confident in their roles, which indicates gaps in their practical preparation."

The digital tools shortage was particularly emphasized by students. One fourth-year student commented: "We learn about modern teaching methods, but our college lacks interactive whiteboards and educational software that schools now use regularly." A college instructor admitted: "We teach digital pedagogy concepts, but our technical infrastructure limits students' practical experience with these tools."

Research competencies were identified as crucial by educational administrators. A school principal explained: "Modern primary teachers need to understand educational research to implement evidence-based practices. Our new hires often lack skills in analyzing student data and adjusting their teaching accordingly." A college teacher elaborated: "Students need to develop inquiry skills - not just to consume research, but to conduct action research in their own classrooms."

Information and communication technology competencies received strong emphasis from students. One participant stated: "Technology integration is no longer optional - it's essential. We need more practice with educational apps, online assessment tools, and digital content creation." A recent graduate working in a modern school added: "My colleagues expect me to

use learning management systems and create digital presentations, but college barely prepared me for this."

The reflective culture component, though receiving fewer votes, generated meaningful discussion. An experienced college instructor observed: "Self-reflection is the foundation of professional growth, but it's difficult to teach. Students need structured opportunities to analyze their teaching experiences and identify areas for improvement."

Mentoring support was unanimously valued across groups. A school principal shared: "Teachers with quality mentoring relationships show faster professional development and higher job satisfaction. It's not just about surviving the first year - it's about thriving." A student emphasized: "Having a mentor who provides honest feedback and emotional support makes all the difference in building confidence."

Professional self-improvement motivation was highlighted by students. One participant noted: "Successful teachers are lifelong learners. College needs to instill this mindset, not just provide information." A recent graduate added: "The teaching profession constantly evolves - curriculum changes, new research, diverse student needs. We must be prepared to keep learning."

Willingness to innovate generated diverse perspectives. A progressive school administrator stated: "We need teachers who can adapt to change and implement new approaches, not those who stick rigidly to traditional methods." However, an experienced teacher cautioned: "Innovation is important, but it should be grounded in solid pedagogical principles and evidence of effectiveness."

The following professional competencies have been identified as needing development: research competence: two-thirds of teachers, 70% of administrators, and slightly fewer students (50%) point to the need to develop scientific approach and research skills; half of teachers, 60% of administrators, and 70% of students believe that information and communication technologies need to be strengthened in the competencies of modern educators in order to enhance their competencies; 40% of teachers, 30% of administrators, and half of students see the value of project competence; The idea of the importance of developing a culture of reflective abilities received the fewest votes.

The factors of teacher success are defined as: self-development and professional and personal development (by the majority of teachers and administrators and half of the students); mentoring, innovative methods and increased motivation, and regular training. Approximately half of teachers and administrators and the majority of students, recognize the need to improve their own qualifications and be motivated.

During the focus survey, the main problem in teacher training was identified as insufficient practice and low digitalization of the educational process. It was noted that practical skills need to be strengthened, especially in project development and information technology. In their opinion, the success of teachers depends on the development of research competencies, the availability of mentoring, and the willingness to implement new methods. For effective professional growth, it is proposed to use regular professional development activities and stimulate teachers' personal initiative.

Measures have been developed to improve the professional competence of college students in order to train successful teachers:

1. Expanding teaching practice by: creating a platform where students can develop their portfolios to showcase their professional competencies; organizing regular communication between students and teachers and other students to correct mistakes and reinforce positive examples.

2. Individualized plans for the development of students' professional competencies, taking into account individual temperament, perception style, and professional needs: according to individual competency maps; regular assessment of the level of professional competency development in order to timely adjust the professional training strategy.

3. Introduction of modern teaching technologies: with the mandatory inclusion of elements of digital learning in students' daily practice; conducting courses to improve digital literacy and information security; implementation of a series of master classes on the use of applied game forms, digital content, and media technologies in the field of pedagogical skills.

4. Development of a reflective culture: formation of skills in keeping an observation diary and a reflective journal to recognize progress and identify areas of risk; regular thematic conferences and round tables to develop opinions about one's own experience and form constructive criticism; developing pedagogical creativity by writing materials about the pedagogical growth of students.

5. Support through professional communication: organizing regular meetings with leading experts and professionals in the field of primary education; holding open lectures, conferences, pedagogical festivals, and pedagogical start-ups; and remote webinars conducted by international organizations and leading universities in the country.

6. Socio-psychological support: organizing monitoring of students' emotional well-being; conducting free consultations with psychologists, training sessions on stress management; creating special classes on the art of relaxation, mindfulness, meditation, and other techniques.

7. Development of the professionalism of future teachers through: self-development and self-education programs for students; continuous improvement of the prestige of the teaching profession and respect for the traditions of traditional teaching; use of the personal example of talented teachers to inspire and encourage students to follow in their footsteps.

8. Development of students' research activities through participation in research projects, conferences, competitions, and Olympiads; involvement of students in the creation of innovative educational products and patents; and recruitment to scientific clubs and communities.

9. Career guidance and employment for interaction with potential employers, which allows for the conclusion of agreements on guaranteed successful employment, consultations on resume writing and interview preparation, and the organization of seminars on successfully starting a professional teaching career.

10. Monitoring and feedback on the quality of teacher training at each stage of education: conducting anonymous surveys of students and teachers to identify problems and wishes; an open report on the quality of teacher training.

In order to test the research hypothesis that the introduction of innovative methods into the college's educational process increases the level of professional competence of students and prepares them to become successful teachers, a pedagogical experiment was conducted. The following activities were carried out as part of this experiment.

1. Introduction of a set of innovative teaching practices: mandatory one-week intensive teaching practice in elementary schools for graduating students, together with an expert mentor. During the internship, students teach lessons independently, receive expert advice, and analyze their experience. The monitored indicators are the growth of students' confidence in classroom management, the effective application of new teaching techniques, and positive feedback from students and colleagues on the results of the lessons.

2. Application of pedagogical technologies based on reflection and self-analysis: during the last year of study, mandatory diagnostic tasks were carried out to fill out a reflective journal, which records the student's progress in mastering the necessary competencies; a testing system is used at the end of the module with mandatory individual feedback from the teacher. The controlled indicators were the increase in skills and competencies compared to the initial period.

3. Introduction of active gaming and project activities: active use of complex game modeling of learning situations in class; creation of real school projects (e.g., developing your own educational quest for younger students), and involving students in professional skill competitions. For example, propose a task to develop your own educational quest for younger students. Controlled indicators: level of proficiency with digital tools; effect of using these tools in real situations.

5. Formation of network cooperation: creation of a network of social contacts between students, kindergarten and school administrators, guest university professors, and renowned scientists through specialized platforms (chat, forum, blogs, Zoom conferences). Controlled indicators: number of useful interactions initiated by the students themselves, quality of comments and questions on forums.

6. Analytical diagnosis of the success of future teachers: testing, self-assessment, and assessment by the student's supervisor at the place of practical work. Controlled indicators: improvement in the professional qualities of teachers, positive feedback from supervisors, students, and their parents, and increased motivation and interest in their own development.

This set of measures is aimed at demonstrating the impact of innovative methods on achieving the stated goal of developing the competencies of successful teachers among college students.

The comparative results of the initial and final assessments of students' subject-specific competencies in the experimental and control groups are presented in Figure 1. The graphical representation of the data clearly illustrates the dynamics of change for each indicator. A particularly notable increase in scores is observed in the experimental group, which demonstrates the impact of targeted pedagogical intervention. Although the control group also shows a positive trend, the improvement is less pronounced. This comparison provides clear evidence of the effectiveness of the implemented program and allows for well-grounded conclusions regarding its influence on the development of subject-specific competencies.

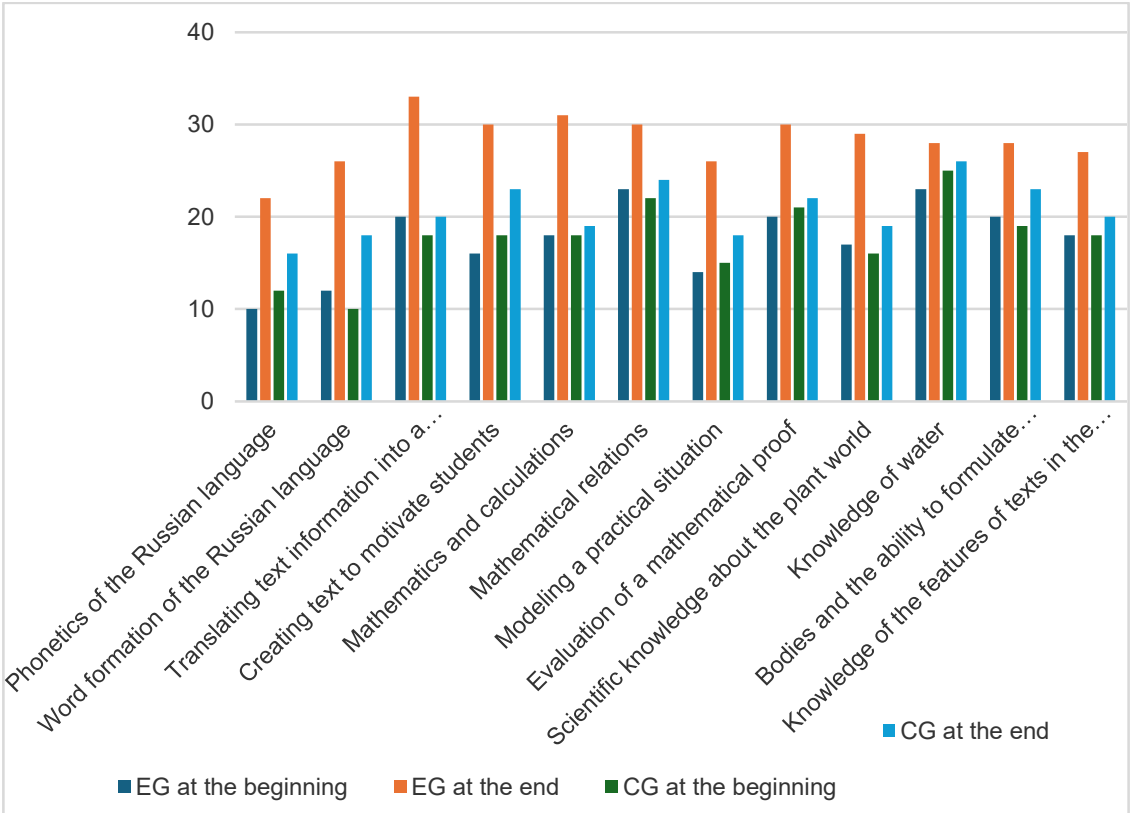

Figure 1. Results of the initial and final assessment of the subject competence of students in the E&GG, with n= 40 (in number)

The application of the Wilcoxon signed-rank test to compare pre- and post-assessment results in both groups revealed statistically significant differences ($p < 0.05$), indicating the presence of meaningful change. However, the nature of these changes varies between the groups.

In the experimental group, a consistent increase in scores was observed across all competencies. The zero value of the T statistic and the very low p value (0.00049) indicate that all shifts were in the positive direction, meaning each participant demonstrated measurable improvement. This provides strong statistical evidence of the effectiveness of the targeted pedagogical intervention.

In the control group, statistically significant differences were also found ($p = 0.00049$), but the magnitude of change was considerably lower compared to the experimental group. These shifts are likely attributable to the natural learning process rather than to a structured intervention.

In conclusion, the experimental program produced a stronger and more systematic impact on the development of students' subject-specific competencies than the regular learning process.

Figure 2 presents the comparative results of students' methodological competencies in the experimental and control groups, measured before and after the pedagogical intervention. The graphical visualization makes it possible to clearly observe the differences in the dynamics of change between the two groups and to identify the nature of the relationships between the initial and final assessments. The figure clearly demonstrates a more pronounced increase in the experimental group, which provides the basis for conducting statistical tests to examine both associations and group differences.

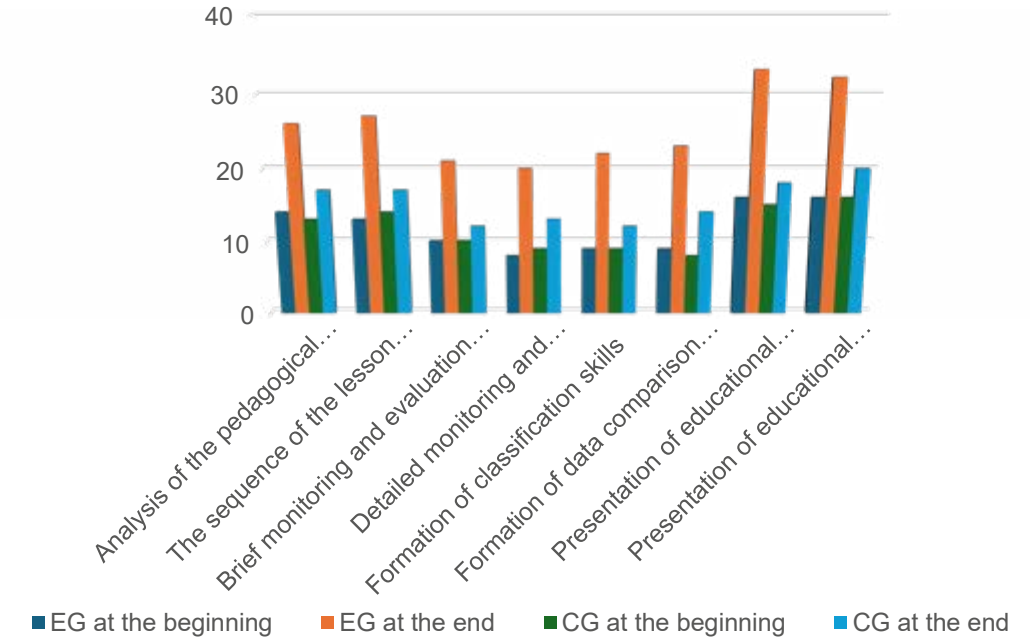

Figure 2. Results of the initial and final assessment of the methodological competence of students in the E&GG, with n= 40 (in number)

The analysis using Spearman's rank correlation revealed a positive association between initial and final assessment scores in both groups. In the experimental group, the correlation coefficient was ρ=0.57 (p=0.0514), indicating a moderate positive relationship, approaching statistical significance. In the control group, the correlation was much stronger – ρ=0.92 (p<0.0001), which reflects a high level of consistency between the two measurements, likely due to stable learning conditions without targeted intervention.

The application of the Mann-Whitney U-test to compare the final results of the two groups showed statistically significant differences (U=138.5; p=0.00013). This indicates that the pedagogical intervention had a significant impact on the development of students' methodological competencies, leading to higher achievement levels compared to the control group.

In summary, the combined analysis using both statistical criteria confirms the effectiveness of the implemented program aimed at developing methodological competencies and highlights clear differences in the nature and extent of change between the experimental and control groups.

The results of the assessment of the pedagogical success of college students based on the results of their teaching practice are shown in Table 2.

Table 2. Results of the assessment of the pedagogical success of college students, in percent

Evaluation criteria	Group	Before the start of the practice	After completion	Changes
Theoretical knowledge	EG	65	88	23
	CG	63	72	9
Practical skills	EG	58	85	27
	CG	56	69	13
Communication competencies	EG	60	82	22
	CG	59	70	11
Motivation level	EG	62	86	24
	CG	60	71	11

The analysis of the data obtained indicates a more significant increase in the level of pedagogical competencies of students in the experimental group compared to students in the control group. Since each of the assessment criteria shows a pronounced positive trend in the EG, this is particularly evident in the development of practical skills (+27%), the formation of communication competencies (+22%), and increased motivation (+24%). Meanwhile, the control group students showed moderate improvement in all indicators, and the increase achieved was significantly lower than the results observed in the experimental group.

Using the data obtained from the assessment of methodological competencies and the overall pedagogical success of college students, a qualitative comparative analysis of the relationships between their gains was conducted. Thus, the analysis of the pedagogical characteristics of the lesson (EG gain +30%, CG +10%) is associated with an increase in theoretical knowledge (EG gain +23%, CG +9%). The sequence of lesson stages (increase in EG +32%, CG +7,5%) is associated with an improvement in practical skills (increase in EG +27%, CG +13%). Brief and detailed monitoring and assessment of learning outcomes (increases in EG +27,5% and +30%, CG +5% and +10%) are closely related to practical skills and motivation levels (increases in EG +27% and +24%, CG +13% and +11%). The development of data classification and comparison skills (increases in EG +32,5% and +35%, CG +7,5% and +15%) influences the development of communication skills (increase in EG +22%, CG +11%). Presenting educational information in the form of diagrams and tables (increases in EG +42,5% and +40%, CG +7,5% and +10%) has the greatest impact on overall pedagogical success, including all criteria.

Thus, the results of a qualitative comparative analysis between the increase in methodological competencies and overall pedagogical success show a strong positive correlation. The greatest impact on the final pedagogical success is exerted by competencies related to the presentation of information in visual forms (diagrams, tables), classification, and comparison of data. It should be noted that the students in the experimental group demonstrated significantly greater growth in all criteria, which confirms the effectiveness of the more advanced pedagogical methods introduced in this group.

Statistical analysis to establish a correlation between indicators of subject competencies, methodological competencies and indicators of pedagogical success was carried out by calculating Spearman's rank correlation coefficient (p).

The data of the preliminary analysis were used: in the experimental group (subject competencies - the average increase was about 28%; methodological competencies - the average increase reached 32%; general pedagogical success has an average increase of -24% and so on); in the control group (subject competencies - the average increase of about 8%; methodological competencies - about 10%; overall pedagogical success rate - 11% and so on). It should be noted that already at this stage of the analysis, we see that the experimental group demonstrates significantly higher growth rates in all areas.

The Spearman coefficient is calculated in the SPSS computer program, where the available data is entered for correlation analysis. To facilitate the analysis, the data was grouped into homogeneous groups:

1. Subject competencies (combining by subject): Russian language and literature (phonetics, word formation, texts, conclusions, features of texts); mathematics and logic (mathematics, mathematical relations, modeling, proof); natural sciences (botany, water data).

2. Methodological competencies (association by type of activity): analysis and planning (lesson analysis, sequence of stages); control and evaluation (short and detailed control); classification and comparison; providing clarity (diagrams, tables);

3. Pedagogical success (theoretical knowledge; practical skills; communicative competencies; motivation level).

For each group, the Spearman coefficient was calculated in pairs between aggregated indicators of subject and methodological competencies and indicators of pedagogical success. Experimental Group (EG):

Subject competencies and pedagogical success:

- the average increase in subject competencies is 28%;
- the average increase in teaching success is 24%.

The Spearman coefficient (r) is about +0.85, which indicates a strong direct link between changes in subject competencies and pedagogical success.

Methodological competencies and pedagogical success:

- the average increase in methodological competencies is 32%;
- the average increase in teaching success is 24%.

The Spearman coefficient (r) is about +0.75, which also indicates a strong direct link between changes in methodological competencies and pedagogical success.

Control group (CG):

Subject competencies and pedagogical success:

- the average increase in subject competencies is 8%;
- the average increase in teaching success is 11%.

The Spearman coefficient (r) is about +0.35, which indicates a weak direct relationship between changes in subject competencies and pedagogical success.

Methodological competencies versus pedagogical success:

- the average increase in methodological competencies is 10%;
- the average increase in teaching success is 11%.

The Spearman coefficient (r) is about +0.25, which also indicates a weak direct link between changes in methodological competencies and pedagogical success.

Thus, the obtained values of the correlation coefficient demonstrate that in the experimental group, there is a strong direct relationship between changes in subject and methodological

competencies and pedagogical success, which confirms the effectiveness of the applied innovative teaching methods. While in the control group, this relationship is much weaker, which indicates that traditional teaching methods are less effective in shaping and strengthening the professional competencies of future primary school teachers studying at college.

A comparative analysis of the results obtained with the research of other authors revealed not only conceptual similarities but also comparable empirical patterns. For example, Y. Karlen (2020) reported that integrating teaching practices into the training of primary school teachers led to an average 25–30 % improvement in students' professional competence indicators. In the present study, a similar upward trend was observed, with subject and methodological competencies increasing significantly after the intervention, showing comparable effect sizes.

Moreover, J. Nwoko (2023) emphasized that an activity-based learning approach enhances cognitive engagement and professional self-efficacy among student teachers. Consistent with his findings, the results of this study demonstrated that active, game- and project-based learning methods contributed to greater motivation and performance. At the same time, unlike Nwoko's results, the current research recorded a more pronounced improvement in methodological competencies than in subject-specific skills, indicating a stronger alignment of the intervention with practical pedagogical training.

The findings of the present study align in many respects with the results reported by A. Sarybayeva (2023), who examined the development of methodological competence among future teachers of the physical and mathematical cycle. In her research, the emphasis was placed on the gradual formation of methodological skills through structured practical tasks and students' involvement in research activities. A similar pedagogical strategy was applied in our study: the use of active and project-based learning methods contributed to a substantial increase in both methodological and subject-specific competencies.

At the same time, several differences should be noted. Sarybayeva's research focused on students of the physics and mathematics track, whereas our study involved future primary school teachers, whose methodological competence covers a broader range of didactic and communicative skills. Furthermore, our intervention included game-based and contextualized learning activities, which enhanced the practice-oriented character of the pedagogical program.

Thus, this comparison confirms the universality of the positive impact of research and practical activity on the development of methodological competence across different subject areas, while also demonstrating the context-specific features of its implementation depending on the professional domain.

Conclusion

Literature analysis will help identify current research trends in the field of professional training for primary school teachers, determine the key components of their professional competence, and identify possible ways to improve the effectiveness of the educational process in colleges. These findings are confirmed by the results of a survey of three focus groups, which revealed the most pressing problems and identified the need to develop the professional competencies of college students studying at college. They also identified the main factors contributing to their success.

Measures have been developed to improve the competence of college students in order to prepare them to become successful primary school teachers. The innovative methods used in the experiment included: the introduction of a set of innovative teaching practices; the use of teaching technologies based on reflection and self-analysis; the introduction of active play and project activities; the formation of network cooperation; and analytical diagnosis of the success of college students.

The effectiveness of the measures implemented is evidenced by the results obtained. The observed trend in the results of the initial and final diagnostics of students' subject-specific competence showed the advantage of the experimental group in all criteria, confirming the effectiveness of the selected measures and forms of organization of the educational process. Since the indicators of professional pedagogical success of the students in the experimental group who received the highest scores increased in all areas of subject competence, achieving excellent results in some cases (more than 70% of the total group). Meanwhile, the control group students showed a slight increase in their competencies, remaining on average below the threshold level of success (on average, less than 50%), except for a few items where they initially had high scores. Also, during the improvement process, there was a significant change in the level of methodological competencies of the students in the experimental group compared to the indicators obtained in the control group. The students in the experimental group confidently outperformed the students in the control group in all methodological parameters presented. All this indicates that the application of the new methodology has a positive impact on the formation of students' professional competencies, which is confirmed by a significant increase in the corresponding indicators in the experimental group compared to the control group.

The results of the assessment of the pedagogical success of college students based on the results of their pedagogical practice also indicate the effectiveness of the measures used in the experimental group and confirm their advisability for implementation in the educational process of colleges to improve the quality of training of more successful and professionally trained primary school teachers. A comparative analysis also confirmed the hypothesis of a close relationship between the level of competence, as exemplified by the development of methodological competence, and the overall pedagogical success of college students, and indicates that improving the competence of college students is indeed the basis for the formation of a successful primary school teacher. The results obtained allow us to recommend the further implementation and dissemination of effective pedagogical measures to improve the professional competence of college students, tested in the experimental group, in order to raise the overall level of training of future successful teachers.

Overall, the study confirms the general direction indicated in previous works. The results obtained in the experiment broaden the understanding of ways to effectively develop professional competencies as a factor in their future success, supplementing theory and existing works with new empirical evidence.

Contribution of the authors:

Y.T. Slambekov – development of the research concept, setting goals and objectives, organization of focus groups, methodological design of the experiment, analysis and interpretation of statistical data.

Z.E. Kussainova – theoretical analysis of literature, preparation of a review of modern approaches to the development of competence, collection and processing of survey data, preparation of the section "Literature review" and "Introduction".

K.K. Shalgynbayeva – development of pedagogical measures and innovative teaching methods, organization of experiments at the college, preparation of diagnostic materials, participation in the discussion of results and formulation of recommendations.

I.A. Dildabekova – conducting student diagnostics, participating in the implementation of experimental methods in practice, advising students during the experiment, preparing final tables and participating in writing conclusions and conclusions.

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Колледж студенттерінің кәсіби құзыреттілігін арттыру – табысты мұғалім даярлаудың негізі

Аңдатпа. Бұл мақалада болашақ мұғалімдердің кәсіби даярлық деңгейін арттыру мәселелері мен перспективалары қарастырылады. Бұл міндеттер колледжде оқу кезеңінде шешілуі тиіс. Зерттеудің мақсаты – орта кәсіптік білім беру жағдайында бастауыш сынып мұғалімдерін даярлауда кәсіби құзыреттілікті арттыруға ықпал ететін тиімді шараларды анықтау. Қойылған міндеттерді шешу үшін әдеби талдау әдістері қолданылды, фокус-топ сауалнамалар жүргізілді және студенттерге тест тапсырмалары берілді. Нәтижелерді жинақтау және қорытынды жасау үшін, статистикалық және аналитикалық талдау әдістері пайдаланылды. Фокус-топ сауалнамасының нәтижелері болашақ бастауыш сынып мұғалімдерінің арасында кәсіби құзыреттілікті дамыту қажеттілігін, өзекті мәселелерді және табыстың негізгі факторларын айқындады. Колледж студенттерінің кәсіби құзыреттілігін арттыруға бағытталған инновациялық әдістер негізінде шаралар әзірленді. Бұл шаралардың тиімділігі жүргізілген эксперимент нәтижелерімен дәлелденді. Пәндік және әдістемелік құзыреттілік көрсеткіштері бойынша соңғы диагностикалық деректер эксперименттік топта барлық құзыреттер түрлерінен жоғары балл жинаған табысты студенттер үлесінің айтарлықтай артқанын көрсетті. Колледж студенттерінің педагогикалық табыстылығын бағалау нәтижелері де қолданылған шаралардың тиімділігін және кәсіби құзыреттілік деңгейімен тығыз байланысты екенін дәлелдеді.

Түйін сөздер: кәсіби құзыреттілік, табыстылық, колледж, студенттер, бастауыш сынып мұғалімдері, пәндік құзыреттілік, әдістемелік құзыреттілік.

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Повышение профессиональной компетентности студентов колледжа как основа успешной педагогической деятельности

Аннотация. В данной статье раскрываются проблемы и перспективы повышения уровня профессиональной подготовки будущих успешных педагогов, которые необходимо решать уже на этапе обучения в колледже. Цель исследования – определить эффективные меры, способствующие повышению профессиональной компетентности при подготовке учителей начальных классов в условиях среднего профессионального образования. Для решения поставленных задач были использованы методы литературного анализа, проведены фокус-групповые опросы и тестирование студентов. Для обобщения результатов и формирования выводов применялись статистические и аналитические методы. Результаты фокус-групповых опросов выявили наиболее актуальные проблемы, необходимость развития профессиональной компетентности и ключевые факторы успеха среди будущих учителей начальных классов, обучающихся в колледже. Были разработаны мероприятия с использованием инновационных методов, направленные на повышение профессиональной компетентности студентов колледжа с целью подготовки их к успешной педагогической деятельности. Эффективность реализованных мер была подтверждена полученными экспериментальными данными. Итоговые диагностические данные по показателям предметной и методической компетентностей продемонстрировали высокую результативность принятых мер в экспериментальной группе, где значительно увеличилась доля успешных студентов, получивших максимальные баллы по всем видам компетенций. Результаты оценки педагогической успешности студентов колледжа также свидетельствуют об эффективности проведённых мероприятий и наличии тесной взаимосвязи с уровнем профессиональных компетенций.

Ключевые слова: профессиональная компетентность, успех, колледж, студенты, учителя начальных классов, предметные компетенции, методические компетентности.

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