



Developing the Future Primary School Teachers Intellectual Skills in Kazakhstan

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The article is devoted to the development of intellectual skills of future primary school teachers in Kazakhstan. The main purpose of this study was to determine the impact of special education on the intellectual level of students, including creative, reproductive and critical thinking skills. Students of the Department of pedagogy attended the study and methods of primary education of the Abai Kazakhstan National Pedagogical University. The principle of experimental research used in the study. The data collected through the survey analyzed using the method of quantitative analysis. Descriptive statistics and Mann-Whitney and Wilcoxon evaluation criteria obtained. The results showed that special training for the development of students' intelligence has a positive effect on the experimental group. In the experimental groups, the level of heuristic, creative, reproductive and critical thinking skills increased after 8 weeks of special training, while the results in the control groups with traditional training showed that the dynamics of the above skills were weaker than in the experimental groups.

Keywords: intelligence, skills, intellectual skills, evaluation criteria, indicators

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INTRODUCTION

The updated educational program, which is included in the educational process of primary and secondary schools in the country, has identified the issue of training specialists with a high level of intellectual skills in the education and training of future professionals in higher education. It is necessary to put into practice the theoretical knowledge acquired by future professionals on the basis of professionalism, knowledge and worldview in the formation of active interaction with students. To do this, it is important to develop intellectual skills through the acquisition of new innovative technologies in teaching and learning.

However, the results of the analysis of the works of scientists in the country show that today in higher education institutions have not yet identified a clear solution to the above-mentioned problem, and no systematic special research has been conducted. This, in turn, necessitated the consideration of the development of the intelligence of future primary school teachers in the process of learning and education.

The updated educational program, which is part of the educational process of primary and secondary schools in the country, has identified the problem of training specialists with a high level of thinking and intellectual potential in the process of teaching and training future specialists in higher education. It is important for future specialists to master new innovative technologies in teaching and learning in order to apply in practice the theoretical knowledge gained based on professionalism, knowledge and worldview, in active interaction with students.

The state program for the development of education and science in the Republic of Kazakhstan for 2016-2019 (2016) reflects the fixed capital of society, the ability to carry out intellectual and creative activities.

It said that the main task of the education system in Kazakhstan is to develop the intelligence of the future specialist.

In order to become a competitive nation, a qualified specialist with a strong sense of national consciousness, in the age of rapid digital growth, the ability consciously select the information necessary for personal development, openness to communication opportunities will be directly related to the development of social intelligence.

At the forum of scholars of the international program "Bolashak" the first President of the country N.A. Nazarbayev presented the national project "Intellectual Nation 2020".

The main goal of the project "Intellectual Nation - 2020" is to increase intelligence.

The main idea of the President in the project "Intellectual Nation 2020" (2014) is the development of society through the development of the economy, raising the social status of the population, the formation of a highly educated person. Today, both attitudes and requirements for intelligence are changing over time.

Therefore, it is necessary to train an intellectual capable of innovating, critically thinking in accordance with the requirements of the times. The most effective way to

develop intelligence is through critical thinking technology. At this stage, we define the problem, discuss it and lead to a critical solution.

Before defining the term “intellectual skills,” we need to clarify the meaning of the term “intelligence”. Below are the definitions of scientists.

Table 1
Description and definition of the term "intelligence"

	definition	description
Platon	the special value of the thinking process, to know the world through thinking.	come to the correct understanding of things
Aristotle	opinion, ability	the ability to base knowledge and work in a psychologically inductive manner
al-Farabi	rationality, sensitivity, understanding, intelligence, education, reading, searching	implementation of innate qualities in the organization of the educational process, search, implementation of research activities
Kant	the mind determines the person, the rational being has dignity, and the unreasonable, non-thinking, is incapable of it	higher cognitive ability that gives principles to reason
Guryevich	the sum of all human mental abilities, cognitive skills	make final decisions using mental abilities, knowledge and skills in life practice, depending on the goal
J. Piaget	adaptation of the subject to a changing environment	Adaptation of a person to living conditions through the acquisition of new knowledge.
Bine	a person who is able to adapt to life thanks to his intellect as well as initiative	human ability to adapt to the environment
Berdibayeva	abilities, specific cognitive activity	conditions of human creative activity
Zharykbayev & Sangilbayev	mental faculties, the beginning of the human mind	the ability to process, correct, read information in the target direction
Kenzhebayeva	a changeable psychological structure, consisting of a stock of ingenuity, the ability to intersect, divergent thinking, freedom of association, motivation and intellectual orientation	the ability to apply knowledge and skills in practice
Nurgaliyeva	a set of personal prerequisites based on natural and genetic, social activity, mental activity understand	realistic, gnostic, constructive and reflective a set of components capable of realizing intellectual skills
Umirbekova	personal and professional structure, contributing to the professional success of a person, interpretation of information	Ability to take effective measures to acquire quality knowledge, having a competitive specialist with a plan

The relevance of our research topic and its practical significance allowed us to determine the topic of our research topic: “Developing the Future Primary School Teachers Intellectual Skills in Kazakhstan.

Therefore, the study is aimed at developing the intellectual skills of future primary school teachers.

In accordance with the purpose of the study, the following key issues were considered:

- is there a statistically significant difference between the level of intelligence of the experimental and the control group before the treatment?

- is there a statistically significant difference in pretest and posttest scores of control group?
- is the statistically significant difference in pre-test and post-test scores of experimental group?
- is there a statistically significant difference between the level of intelligence of the experimental group and the control group after the treatment?

Literature Review

According to Article 3 of the Law of the Republic of Kazakhstan "On Education" (2007), one of the principles of educational policy states: "... access to education at all levels, taking into account the intellectual development, psycho-physiological and personal characteristics of each person". Analysis of government documents is an initiative idea for university students.

The results of the analysis of scientific works revealed that scientists have considered various aspects of the concept of intelligence. The concept of intellectual skills Shamova, Babansky & Shchukina, the concepts of emotional intelligence, multi-intelligence were analyzed in the scientific works of Mohammad, Hooshang & Esmail, Karim, Nerina, Neil Anderson & Seyed.

Shamova (2007) considers intellectual skills as skills, analysis, synthesis, comparisons, identification of causal links of qualifications, systematization.

In the theory of generalization, Babansky (1981) identifies the following intellectual skills: - to motivate their activities; - to carefully perceive the information; - to memorize rationally; - to logically comprehend the educational material, highlighting the main thing in it; - solve problem cognitive tasks; - do the exercises on your own; - exercise self-control in educational and cognitive activities.

Intellectual skills, according to Shchukina (1998), "they are mobile, mobile, variable; operate without fail in any situation and on any subject material."

Mohammad, Hooshang & Esmail in his scientific article "The Impacts of Emotional Intelligence Enhancement on Iranian Intermediate EFL learners Writing Skill" wrote "Emotional intelligence is investigated in this paper. The author in his study examined the effect of increasing emotional intelligence on writing skills », - he said.

Karim, Nerina, Neil Anderson & Seyed in their work "Multiple Intelligences, Motivations and Learning Experience Regarding Video-Assisted Subjects in a Rural University" examined intellectual skills from different angles and identified their interrelationships.

In our research, we analyze the concept of "mental development" in a narrow sense, since the most interesting for us are the features of thinking and as its component - intellectual skills. Definitions of "intellectual skills" are presented in Table 2.

Table 2
Definitions of “intellectual skills”

Author of the definition	Definition of “intellectual skills”	Interpretation of the definition
Zankov, L.V.	"Combining into a defined functional system of different ways of mental activity"	Methods of mental activity
Lerner, I.Y.	“Generalized mental actions. Basic intellectual skills-comparison, abstraction, analysis, synthesis”.	Generalized mental actions
Menchinskaya, N.A.	“The success of the mental operations (mental techniques) with which knowledge is acquired”.	The implementation of the mental operations
Shamova, T. I.	“The ability to acquire and process of the information”.	Ways to deal with the information

Although the above table gives different definitions of the concept of "intellectual skills", as scientists believe, it is clear that this does not affect its meaning. In general, we have come to the conclusion that intellectual skills are an integral part of thinking. The flow of thought arises from the presence of operations of analysis, synthesis, comparison, classification, generalization, etc.

The description of the basic mental operations gives priority to their connection with the performance of certain mental actions, which in turn forms the basis for the successful development of intellectual skills.

One of the main factors contributing to the development of intelligence in the process of training and education are innovative technologies.

Innovative technologies - this is a system of methods, tools, training methods, educational tools, aimed at achieving positive results for the account of dynamic changes in the personal development of the child in modern sociocultural (Yagyadzhik, 2016).

At present, the world, integration processes and increasing competition in the labor market place high demands on graduates of the country's universities. Therefore, in accordance with the updated content of education in higher education, there is a growing need to train specialists who are well-versed in innovative technologies in teaching and learning, who have developed intellectual skills that can effectively implement in the educational process.

In their work, scientists have studied the diversity of innovative technologies. In particular, information and communication technology, technology for the development of critical thinking, modular, computer training technology, etc. Within the framework of the updated educational content, it is important to focus on the development of intellectual skills of the future specialist, effectively using innovative technologies in teaching and learning activities.

In our opinion, the future specialist should know the possibilities of innovative technologies and be able to apply them in practice. In the process of work based on the development of intellectual skills of the future specialist on the basis of innovative

technologies, students' horizons expand, information culture increases, intellectual skills develop.

D. Halpern: "Critical thinking is the use of cognitive techniques or strategies that increase the likelihood of getting the desired end result. This definition characterizes thinking as something distinguished by controllability, validity and purposefulness - the type of thinking that is used when solving problems, formulating conclusions, probabilistic assessment and decision-making. At the same time, the thinker uses skills that are justified and effective for a specific situation and the type of problem being solved"[Halpern D. Psychology of critical thinking, 2000]

Critical thinking is a system of judgments that is used to analyze things and events with the formulation of reasonable conclusions and allows you to make informed assessments, interpretations, and also correctly apply the results to situations and problems (Dr. Peter, (1990).

In our opinion, in order to develop and improve intellectual abilities through critical thinking, it is necessary to develop such qualities as: the ability to analyze one's own experience, navigate in the future in one's actions, make one's own decisions, and be responsible. for these decisions to understand how others understand and perceive.

Critical thinking methods - essays, INSERT, cluster, forecasting, discussion and other methods are aimed at developing the intellectual abilities of future specialists.

And also, trainings and exercises based on critical thinking are aimed at developing the intellectual abilities of future primary school teachers.

Based on the above, we come to the conclusion that thought processes, the use of innovative technologies, spatial perception, the ability to memorize and reproduce specific, semantic information, creativity, critical thinking will help us develop the intellectual abilities of future teachers.

METHOD

The Structure of the Study and Its Participants

The quantitative method of research was used in this study during experimental research.

Preliminary and final testing may be performed during pre-experimental research, but there will be no control group. During the quasi-experiment, both preliminary and final tests are performed, as well as experimental and control groups, but randomization is not performed. During a reliable experiment, preliminary and final tests are performed, experimental and control groups are involved, and randomization is performed (Nunan, 1992). In this case, a reliable experimental research method was used in the study.

The study was also conducted at Abai Kazakh National Pedagogical University in Almaty, Kazakhstan. Participants of the experimental and control groups were selected from 3rd year students of the Department of pedagogy and methodology of primary education. Participants were freely selected. The control group consists of 30 students, and another 30 students form an experimental group. Initially, the statistical analysis

program was used to ensure that the two groups of students had the same statistical level of critical thinking.

This subsection of our work describes the course and results of experimental work carried out during the study.

The purpose of the research experiment is to determine the initial level of intellectual skills of future primary school teachers and to test methods for improving it.

Our experimental work was carried out in three stages (detection, formation, control) and was carried out in the following order:

- the goals and objectives of the experimental work are determined.;
- diagnostic methods were selected and conducted;
- Formative experimental materials were tested;
- The results of practical work developed and described by mathematical and statistical methods.

Depending on the goals and objectives of the research, an experimental experimental program was developed and implemented in stages.

Tasks of experimental work:

1. Selection of participants to participate in the experiment;
2. Selection of research methods and techniques in accordance with the purpose of the experiment and conducting a diagnostic experiment, mathematical and statistical processing of the results.
3. Preparation and testing of the content of the elective course program "Methods of developing students' intelligence on the basis of critical thinking";
4. Check the effectiveness of the course program and develop recommendations.

Instrument and Procedure

The focus of the study is to develop students' intelligences in terms of their levels of heuristic, creative, reproductive and critical thinking skills. It is hypothesized that by the instruction implemented to the group of students in special courses will develop certain skills such as heuristic, creative, reproductive and critical thinking skills, consequently it may develop their level of intelligence. An 8-week program was developed for the experimental group by the researcher.

The content of the elective course was based on an analysis of works on intelligence and critical thinking and became the basis for a deep understanding of the essence of intelligence in critical thinking.

The main purpose of the elective course: to understand the concept of "intellectual" and "intellectual skills", the formation of knowledge, skills and abilities, the theoretical foundations and features of their development, the practical application of opportunities and mechanisms for developing intellectual intelligence of future teachers.

The main types of work in the elective course: lectures, work with sources of literature, analysis of school curricula, content of updated education of the Republic of Kazakhstan, participation in school teachers' lessons, lesson planning, problem solving, presentations and other types of work. The set of methods used to determine the level

of students in the research was developed and implemented in accordance with the schedule.

The quantitative data in the study are collected through the test prepared by the researched in order to measure their levels of heuristic, creative, reproductive and critical thinking skills. The test included overall 20 items and was created in the form of Likert test with 5 answers from totally agree to totally disagree. This test was used as a pre-test to determine whether the two groups are statistically equal in terms of their levels of intelligences and if they need any training to develop them. Later, the same test was used as post-test at the end of the instructional procedure to assess the effectiveness of the training process.

Data Analysis

Before conducting inferential statistical analysis, the test of normality was performed to the data in order to choose between parametric or non-parametric tests. It was looked at the distribution of data whether it is normal or not.

First, in order to answer the first research question, whether there was a statistically significant difference between the control and the experimental group students, their overall pre-test scores were compared with the help of statistical analysis program Mann Whitney U test, to see if they performed statistically equal levels. Further, to find the answers for the second and third questions, after the instructional program was applied Wilcoxon test was performed for both control and experimental groups pretest and post test scores in order to determine whether there were any changes in their levels of skills. Following, to answer the fourth research question, to find out whether the experimental group performed differently in comparison to control group after the treatment Man Whitney U test was conducted.

Considering that the data in each group is less than 50, Shapiro-Wilk Test of Normality was used (Razali & Wah, 2011). The findings regarding the normality are given in table 3.

Table 3
Test of normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Experimental group pre-test	,248	30	,000	,602	30	,000
Experimental group post test	,203	30	,003	,893	30	,006
Control group pre-test	,190	30	,007	,936	30	,070
Conrol group post-test	,205	30	,002	,834	30	,000

p>0.05

Since the data did not follow a normal distribution ($p < 0.05$), it was decided to use a non-parametric tests during the statistical analysis.

FINDINGS

This section provides data related to the above research issues.

At the initial stage, criteria and indicators were developed, as well as the relationship between the levels and criteria of intellectual development based on intellectual skills was analyzed (Table 4).

Table 4
Criteria and indicators for the development of students' intelligence

intellectual skills	Criteria and indicators		
	High level	Middle level	Lower level
Heuristic skills	The process of perception, memory, thinking and imagination and development is formed at a high level, and solves new problems based on heuristic skills in teaching and learning.	Can effectively use intellectual skills in solving new problems, based on trial and error methods.	Heuristic skills are not developed at a high level. Can't solve new problems.
Creative skills	Intellectual skills seen at a high level of creativity as an activity aimed at creating something new	Can create new images, objects or actions based on previous creative experience.	Due to the low level of creative potential, they are not able to use their intellectual skills in new conditions.
Reproductive skills	Reproductive skills are reflected at a high level, with a relative recapitulation of past experience	Can apply previously acquired knowledge in new situations. Practices based on business and intellectual skills.	Reproductive skills are not developed at a high level. Cannot apply theoretical knowledge in practice.
Critical thinking skills	Critical thinking skills observed at a high level of self-management, control and analysis of one's actions during the development of consciousness.	Can be critical and problem solving in solving any problem. Can analyze, collect and select a lot of information	Critical thinking skills are not fully developed. Cannot combine information about new knowledge with previously acquired knowledge

Prior to the start of the experiment, preliminary testing was performed in the experimental and control groups to determine whether the groups showed statistically comparable results. Statistical processing is performed using the Mann-Whitney U criterion. The test results are shown in Table 5.

Table 5
The pretests results of the experimental and control groups

		N	Mean Rank	Sum of Ranks	Z	p
Pre-test	experimental group	30	28,18	745,50	-.451	,685
	control group	30	25,82	684,50		

As it is shown in Table 6, the results indicated that both of the groups performed statistically similarly. There was not found significant difference in the pretest results between the experimental and control groups ($p > 0,05$, $Z = -0,451$). Both the p value (0,685) and mean rank scores clearly demonstrates that the groups started at nearly the same point.

Since the test of normality indicated that the data did not follow normal distribution non-parametric test, Wilcoxon Test for comparing two dependent groups was applied to the

pretest and posttest scores of the control group. The results are presented in tables 6 and 7.

Table 6
Mean and standard deviations of pretest and posttest scores of the control group

	N	Before		After	
		Mean	Std. Deviation	Mean	Std. Deviation
Heuristic	30	1,4733	,28999	1,6933	,39211
Creative	30	1,6400	,39444	1,8333	,35266
Reproductive	30	1,5733	,40593	1,8133	,48119
critical	30	1,6200	,31228	1,6867	,36647
Total	30	1,5767	,21525	1,7567	,28031

As shown in Table 7, the average scores of students on four skills (heuristic, creative, reproductive and critical thinking skills) were changed. The average score on preliminary testing was 1.57, and the average score on final testing increased to 1.75. The same results obtained for all four skills, which shows that the skills of students have developed. In addition, testing was conducted according to the Wilcoxon criterion, which allowed obtain additional statistics.

Table 7
Wilcoxon test on control group's pretest and posttest

		N	Mean Rank	Sum of Ranks	Z	p
Heuristic	Negative Ranks	0 ^d	,00	,00	-3,219	,001
	Positive Ranks	13 ^e	7,00	91,00		
	Ties	17 ^f				
	Total	30				
Creativity	Negative Ranks	0 ^g	,00	,00	-3,601	,000
	Positive Ranks	16 ^h	8,50	136,00		
	Ties	14 ⁱ				
	Total	30				
Reproductivity	Negative Ranks	0 ^j	,00	,00	-3,205	,001
	Positive Ranks	13 ^k	7,00	91,00		
	Ties	17 ^l				
	Total	30				
Critical thinking	Negative Ranks	2 ^m	4,00	8,00	-1,755	,079
	Positive Ranks	7 ⁿ	5,29	37,00		
	Ties	21 ^o				
	Total	30				
Pretest-posttest	Negative Ranks	0 ^a	,00	,00	-4,667	,000
	Positive Ranks	28 ^p	14,50	406,00		
	Ties	2 ^c				
	Total	30				

Test results on the Wilcoxon criterion presented in Table 7 are based on the level of heuristic ($Z = -3,219$; $p = ,001$), creative ($Z = -3,601$; $p = ,000$) and reproductive ($Z = -3,205$; $p = ,001$) skills. Statistically significant differences were found between the

results of the preliminary and final tests of the control group, and students did not show differences in the level of development of critical thinking skills ($Z = -1,755p = ,079$).

In addition, a Wilcoxon test used to compare the results of the preliminary testing with the results of the final testing of the experimental group.

Table 8

Mean and standard deviations of the results of preliminary and final testing of the experimental group

	N	Before		After	
		Mean	Std. Deviation	Mean	Std. Deviation
Heuristic	30	1,5667	,35038	4,5267	,23183
creative	30	1,7200	,46974	4,5067	,20160
reproductive	30	1,5800	,42279	4,5067	,18742
critical	30	1,6400	,35894	4,7333	,14223
Total	30	1,6767	,35674	4,5683	,05943

The results of the descriptive statistics indicated that there is a striking difference between experimental group's pretest and posttest scores in terms of all four skills.

Table 9

Wilcoxon test on experimental group's pretest and posttest

		N	Mean Rank	Sum of Ranks	Z	p
Heuristic	Negative Ranks	0 ^a	,00	,00	-4,794	,000
	Positive Ranks	30 ^b	15,50	465,00		
	Ties	0 ^c				
	Total	30				
Creative	Negative Ranks	0 ^d	,00	,00	-4,721	,000
	Positive Ranks	29 ^e	15,00	435,00		
	Ties	1 ^f				
	Total	30				
Reproductive	Negative Ranks	1 ^g	1,00	1,00	-4,774	,000
	Positive Ranks	29 ^h	16,00	464,00		
	Ties	0 ⁱ				
	Total	30				
Critical	Negative Ranks	0 ^j	,00	,00	-4,732	,000
	Positive Ranks	29 ^k	15,00	435,00		
	Ties	1 ^l				
	Total	30				
Sontest	Negative Ranks	0 ^m	,00	,00	-4,787	,000
	Positive Ranks	30 ⁿ	15,50	465,00		
	Ties	0 ^o				
	Total	30				

As shown in Table 8, the Wilcoxon test results showed statistically significant differences between the results of the preliminary and final tests on all four skills of the experimental group: heuristic ($Z = -4,794$; $p = 0,000$); creativity ($Z = -4,721$; $p = 0,000$); reproductive ($Z = -4,774$; $p = 0,000$); critical thinking skills ($Z = -4,787$; $p = 0,000$). In

addition, descriptive statistics allowed to obtain visual evidence in accordance with the average score (see Table 7). Thus, this significant change may be due to the training course conducted in the practice group throughout the semester.

The scores of the experimental and control groups obtained during the preliminary and final testing then analyzed to assess the development of their skills. As mentioned above, the experimental team did a much better job, significantly improving the results of the final testing. In addition, the control team showed a slight improvement in the results of final testing. Mann-Whitney's U-criterion applied to their scores based on the results of final testing to determine differences in their development. The results of the Mann-Whitney U-test given in Table 10.

Table 10

The pretests results of the experimental and control groups

	N	Mean Rank	Sum of Ranks	Z	p
Posttest					
experimental group	30	45,50	1365,00	-6,682	,000
control group	30	15,50	465,00		

The findings obtained from statistical analysis shown in the table illustrates that there was a statistics show a discrepancy between the posttest score of control and experimental groups. it is clear from the mean rank scores that experimental group students outperformed the control group students with the average of the posttest scores in the experimental group is 45.50 whereas this value in the control group equals to only 15.50. That is, the range between them is 30 points.

DISCUSSION

Intelligence is an important component of the process of critical thinking, which is part of the structure of mental abilities and intellectual development. One of the reliable criteria for personal mental growth, intellectual skills reflect a certain quality of human mental activity and can influence basic mental processes.

The peculiarities of the development of the mind of the future primary school teacher are associated with the need to analyze, compare, generalize phenomena and processes, to establish causal relationships between them, and this requires special knowledge, a certain sequence of actions when performing operations.

The study identified psychological and pedagogical conditions that ensure the effectiveness of the concept of intellectual development of students.

The results of experimental work confirmed that the developed algorithm is an effective tool for the development of intellectual skills of future primary school teachers based on critical thinking. Positive dynamics of the impact of experimental learning on the mental development of students, their mastery of logical thinking operations, strengthening the positive qualities of thinking: productivity, flexibility, alertness, etc.

The results are consistent with the results of some researchers, such as Kenzhebaeva (2014), Ashirbaeva (2015), Umirbekova (2018). They showed that intelligence is not fixed. Kenzhebaeva (2014) in her work considers the problem of developing intellectual potential among future teachers in a wide range. The leading idea of her research: the

development of intellectual potential will ensure the development of future teachers in accordance with the requirements of society, and this will make it possible to determine the pedagogical psychological conditions for independent effective development of quality.

A methodology for the development of intellectual potential in future teachers has been created, its effectiveness and efficiency has been tested in practice. Developments aimed at developing the intellectual potential of future teachers can be used in the practice of universities and advanced training institutes.

In the work of Ashirbaeva (2015), intellectuality is considered as the importance of the intellectual development of students in military schools. Since, at the present time, our State needs creatively minded specialists in the field of power structures. Based on this work, she made profессиograms for the main military specialties.

Umirbekova (2018) considers only the methodology for the development of social intelligence of future primary school teachers, tested the structurally substantive model, and presents scientific and methodological recommendations. The practical significance of the research work: the elective course "Development of social intelligence of future primary school teachers" was prepared.

In our work we studied the development of intellectual skills. Critical thinking is the basis for the development of intelligence. Our research addresses the relationship between critical thinking and intelligence; opens the way for a separate in-depth consideration of critical thinking as a tool for intellectual self-improvement, the study of forms and methods of designing the principles of critical thinking in the educational process. The results of the study showed that the level of intellectual skills of the experimental group was higher than that of the control group. There were no significant changes in the control group.

Based on the results obtained, the effectiveness of intellectual skills and the factors influencing its development has been proven. The results of the study can be used in higher and specialized educational institutions engaged in the training of primary school teachers. As a result, it is possible to train qualified specialists with developed intellectual skills..

CONCLUSION

Analyzing the possibilities of introducing innovative technologies and critical thinking methods in the process of developing the intellectual skills of future primary school teachers, we came to the following conclusions:

1. On the basis of our analysis of strategic development programs and regulations of the state in accordance with the updated content of education, the relevance of the development of intellectual skills of future primary school teachers in higher education has been confirmed. The analysis of theoretical works on the problem allowed to form the essence of the concept of "intellectual skills". Subjects participating in the experiment were freely selected. Intellectual skills - the ability to recall the main indicators of educational activity, to prove the meaning and results, to express their views.

2. Criteria and indicators for the development of intellectual skills of future primary school teachers were identified through the theoretical and methodological bases. It has been proved that in a structure consisting of heuristic, creative, reproductive, critical thinking skills; it is possible to develop the intellectual skills of a future specialist if he takes full advantage of the opportunity to solve the problem of intellectual skills research.

3. The content of the elective course "Methods of developing students' intelligence based on critical thinking", developed in accordance with the objectives of the study and practiced in the educational process of the university, contributed to the development of intellectual skills of future primary school teachers.

4. The results of the experiment show that students understand the need to develop intellectual skills and are interested in its development, knowledge of innovative technologies and critical thinking; understand the essence and function of the methods used; showed an increase in intellectual skills. These results allowed to change the existing structure of training in the country, to create new models and options.

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