

PREPARAÇÃO DE PROFESSORES FUTUROS PARA A IMPLEMENTAÇÃO DE NOVAS ABORDAGENS PEDAGÓGICAS NAS CONDIÇÕES DO CONTEÚDO RENOVADO DE EDUCAÇÃO ESCOLAR

PREPARATION OF FUTURE TEACHERS TO THE IMPLEMENTATION OF NEW PEDAGOGICAL APPROACHES IN THE CONDITIONS OF THE RENEWED CONTENTS OF SCHOOL EDUCATION

ПОДГОТОВКА БУДУЩЕГО УЧИТЕЛЯ К РЕАЛИЗАЦИИ НОВЫХ ПОДХОДОВ В ПРЕПОДАВАНИИ И ОБУЧЕНИИ В УСЛОВИЯХ ОБНОВЛЕННОГО СОДЕРЖАНИЯ ШКОЛЬНОГО ОБРАЗОВАНИЯ

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RESUMO

A relevância da questão de pesquisa é causada pela transição para o período escolar de 12 anos na escola e elaboração insuficiente do apoio teórico-científico-metodológico da preparação de futuros professores para a implementação de novas abordagens pedagógicas nas condições de padrões renovados da educação geral. Assim, o objetivo do trabalho é desenvolver o modelo estrutura-conceitual para a preparação de futuros professores para a implementação de novas abordagens pedagógicas nas condições de conteúdos renovados do ensino médio geral no aspecto da abordagem sistema-atividade proporcionando uma oportunidade considerar as maneiras pelas quais os futuros professores podem projetar independentemente suas capacidades cognitivas por meio de suas próprias ações no processo de prática. O principal método de pesquisa é a modelagem que permite projetar o processo de preparação de futuros professores para a implementação de novas abordagens pedagógicas no período escolar de 12 anos com base em análise, síntese, pesquisas, observações, experimentos, processamento dos resultados com os métodos de estatística matemática. O artigo apresenta o modelo estrutura-conceitual para a preparação de futuros professores para a implementação de novas abordagens pedagógicas nas condições de conteúdos renovados da educação escolar, refletindo as etapas, conteúdos, metas, tarefas e resultados esperados do experimento, bem como a motivação baseada em valores, componentes de conteúdo e processo, critérios e níveis possíveis. A implementação do modelo implica o teste profissional de futuros professores nas atividades profissionais nas condições de padrões renovados de educação geral na escola e é focado em testar o suporte científico-metódico e o apoio do seu processo de preparação para a implementação de novas abordagens pedagógicas. Os materiais do artigo implicam o significado prático para os professores universitários das especializações pedagógicas.

Palavras-chave: *modelo estrutura-conceitual, novas abordagens pedagógicas, conteúdos renovados da educação, abordagem sócio-construtivista, metacognição.*

ABSTRACT

The relevance of the research issue is caused by the transition to the 12-year educational period at school and insufficient elaboration of the theoretical and scientific-methodical support of the preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed standards of general education. So, the objective of the paper is to develop the structure-conceptual model for preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of the general secondary education in the aspect of the system-activity approach providing an opportunity to consider the ways the future teachers may independently design their cognitive capacities by their own actions in the process of practice. The leading research method is modeling that allows designing the process of preparation of future teachers to the implementation of new pedagogical approaches in the 12-year school period based on analysis, synthesis, surveys, observations, experiment, processing of the results with the methods of mathematical statistics. The paper presents the structure-conceptual model for the preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of school education, reflecting the stages, contents, targets, tasks and expected results of the experiment, as well as the value-based motivation, contents and process components, criteria and possible levels. The implementation of the model implies the professional testing of future teachers in the professional activities in the conditions of renewed standards of general education at school and is focused on testing of the scientific-methodical support and the support of their preparation process to the implementation of new pedagogical approaches. The materials of the paper imply the practical significance for the university teachers of the pedagogical specializations.

Keywords: *structure-conceptual model, new pedagogical approaches, renewed contents of education, socio-constructivist approach, metacognition.*

АННОТАЦИЯ

Актуальность исследуемой проблемы обусловлена переходом на 12-летнее обучение в школе и недостаточной разработанностью теоретического и научно-методического сопровождения подготовки будущих учителей к реализации новых подходов в преподавании и обучении в условиях внедрения новых общеобразовательных стандартов. Поэтому цель статьи заключается в разработке структурно-содержательной модели подготовки будущих учителей к реализации новых подходов в преподавании и обучении в условиях обновленного содержания общего среднего образования в аспекте системно-деятельностного подхода, позволяющего рассмотреть, как будущие учителя могут самостоятельно конструировать свои когнитивные способности с помощью собственных действий в ходе практики. Ведущим методом исследования является моделирование, позволяющего осуществить конструирование процесса подготовки будущих учителей к реализации новых подходов в преподавании и обучении в 12-летней школе на основе анализа, синтеза, опросов, наблюдений, эксперимента, обработки результатов методами математической статистики. В статье представлена структурно-содержательная модель подготовки будущих учителей к реализации новых подходов к преподаванию и обучению в условиях обновленного содержания образования в школе, отражающая этапы, содержание, цели, задачи и ожидаемые результаты эксперимента, а также ценностно-мотивационный, содержательный и процессуальный компоненты, критерии и возможные уровни. Реализация модели предполагает профессиональную пробу будущих учителей в профессиональной деятельности в условиях внедрения новых общеобразовательных стандартов в школе и ориентирована на апробацию научно-методического обеспечения и сопровождения процесса их подготовки к реализации новых подходов к преподаванию и обучению. Материалы статьи представляют практическую ценность для преподавателей вузов на педагогических специальностях.

Ключевые слова: *структурно-содержательная модель, новые подходы к преподаванию и обучению, обновленное содержание образования, социоконструктивистский подход, метапознание.*

1. INTRODUCTION

The more and more undoubted is currently the fact that the learning process and the results of school students are rather *influenced by the peculiarities* of the teacher, than by the activities of the school directors and educational ministries.

The results of the international research in the sphere of education confirm the fact that teachers with the relevant professional skills, necessary competencies and conceptual understanding of the pedagogical process are capable of qualitatively changing the education of youth (Barber and Murshed, 2008; Peng *et al.*, 2019).

The same as the previous centuries, the teacher still remains the core figure in the improvement of the activities of schools and effectiveness in teaching the school student. (Peters and Waterman, 2011; Lozano *et al.*, 2019).

The reforms in the sphere of the contents of the general scientific and professional preparation, the creation of new models of specialists, models of the learning process, occupational practice etc. are caused by the changes taking place in the views of the scientists and experts, heads of the universities and industrial structures to the requirements for the peculiarities of a future specialist. Globally, the developed capacities of quick coping with the information environment, the skills to be flexible to meet the relevant needs of the industry and changing economic and labor conditions are currently appreciated, rather than the knowledge acquired at the university.

Notably, the early 21st century for the university pedagogics has been marked by an active search of new models of future specialists' professional training. The suggested concepts (the concept of personally developing higher education, competence and student-oriented approaches, the concept of flexible educational programs of higher education etc.) are aimed at the implementation of the humanistic paradigm of education. Undoubtedly, this paradigm points at the necessity of ensuring the conditions for the students' independence, their teaching to the ways of cognition for the formation of learning skills. In the future, it will allow them to improve their competence, forming and developing the specific worldview including the critical attitude towards their own values and achievements (Deichmann *et al.*, 2016; Quadrado and Zaitseva, 2019).

The UN Human Development Report contains an analysis of the new human skills in the 21st century. Here it is noted that by 2020 there will be a change in more than 1/3 skills important for labor activities. The acquisition of the skills should become a part of the educational process during the entire life, aimed at four criteria: critical reasoning, collaborative skills, creativity and communicative skills (Human Development Report, 2016; Irsaliyev *et al.*, 2017; Barot and Krpec, 2019; Korshunov *et al.*, 2016).

According to the results of the research conducted in Kazakhstan in 2012-2013, the OECD experts concluded that "one should conduct the complete analysis and revision of the current program of the secondary education, which failed to prove its effectiveness. It has not ensured high

educational parameters, has not provided an opportunity for every school student to achieve the minimum level of the functional and mathematical literacy, has not contributed to the development of the high level of reasoning" (Irsaliyev *et al.*, 2017; Setyowati and Louise, 2018). It is also confirmed by the results of the PISA international research. For example, Kyrgyzstan refused from the participation in the 2012 and 2015 PISA research, supporting its position with the fact that the planned reform stages had not been implemented, while the factors affecting the results continue having an adverse effect on the quality of school education (Gridina and Andreev, 2017).

In these analytical reports, the experts are focused on the overload of the school student with the academic disciplines and theoretical material, which makes the program more complicated and less available for those who lag behind. The focus of the educational contents on the acquisition of the knowledge, but not on their application in the life situation leads to the low level of functional literacy (Kazanin and Rudakov, 2016).

The analysis of the educational conditions in the Republic of Kazakhstan, the assessment of its quality, the results of the international research, and the experience as part of the experiment on the implementation of the 12-year educational period in the pilot schools contributed to the fact that in the normative documents (State Program of Educational Development of the Republic of Kazakhstan, 2010; Cleovoulou, 2018) one of the tasks was aimed at the renewal of the educational contents and the transition to the 12-year model of education. Accordingly, its implementation required a new teaching staff, which would be ready to teach at the level of the international standards of such countries as Singapore, Swiss, Australia, etc.

It became necessary to put the school education in compliance with the world practice requiring the 12-year model of education. Particularly, the international standard classification of education adopted by UNESCO in 2011 and entered into force since the 1st January 2014 (Linn, 2014; Mu *et al.*, 2018), recommends the length of the educational period equal to 12 years, while the 11-year school provides the graduates with only the 3rd level of the European Qualification Framework. It means that a graduate from a Kazakhstan school has only the elementary skills and is able to work at low qualification jobs. The 12-year school provides the full-fledged industry-specific training and leads the school graduates to the 4th level of the EQF, which allows getting access to a more qualified job. Thus, the

12-year school education has become a necessary condition to ensure the quality and compatibility of the national data at the international level.

2. MATERIALS AND METHODS

In the process of study, the authors used the following methods: theoretical (analysis; content analysis, synthesis; abstraction, analogy; and modelling); diagnostic (survey; testing; assessment, and self-evaluation); empirical (studying the process and products of the students' and teachers' activities, laws and regulations, methodical documentation; ranking, and observation); experimental (summative, formative, and control experiments); methods of mathematical statistics and graphics display of results. The experimental base of the study was the O.A. Baikonurov Zhezkazgan University, general educational schools, and colleges of the city of Zhezkazgan. The study of the problem had three stages:

At the first search-theoretical stage, the authors studied the literature, revealed the main trends and directions in the development of the pedagogics and practice in the sphere of preparation of future teachers at the university.

At the second stage, the authors developed the model of preparation for the implementation of the new pedagogical approaches in the conditions of the renewed contents of school education; revealed and substantiated the complex of the organizational-pedagogical conditions and the methods for the required training; conducted the experimental work on testing the training methods, analyzed and interpreted the results obtained during the experiment.

At the third stage, the authors completed the experimental work, elaborated the theoretical and practical conclusions, generalized and systematized the obtained results, and developed the recommendations for the users.

3. RESULTS:

3.1. Structure and contents of the model

The unification of the teachers and students to a single subject is caused by the modern requirements to the choice of the grounds for the nature of the 'subject-subject' relations of the educational process participants. The sense of these relations is in the fact that the "development

of a school student implies constant development of the teacher, which is the condition for the development of the school student" (Zimnyaya, 2002; Fedosejeva *et al.*, 2018).

Today, the university is undergoing the changes in the organization of the education form with the focus on the student-oriented education, new teaching methods based on the competence and system-activity approaches with the access to the results of the education (Attard *et al.*, 2017; Chekour *et al.*, 2018).

The consideration of the conceptual ideas of these approaches allowed developing the structure-conceptual model for the preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of school education (Table 1). In Table 1, the teacher's activities are presented as scientific-theoretical and methodical support in the learning process at the lessons and during the pedagogical practices, while the student's activities - the research of a lesson in an authentic class. The support implies the development of the contents, means, forms and methods in the educational process aimed at the revealing and use of the subjective experience of the future teacher, revealing the ways of his/her reasoning, and the construction of the development trajectory through the implementation of the educational program considering the personal and professional needs (Ulyanova and Svinareva, 2015; Sherwood *et al.*, 2018). While the research of the particular lesson for a student is a gradually developing process implying the stage of collection of the information about the pedagogical quality in a series of lessons, analysis, and integration of the obtained data during the observation, the surveys of the colleagues, students and other methods of the data collection. The correction of the plans by a series of the lessons reflects the challenges for the school student and the extent of understanding of the subject, as well as the assessment of the results of these actions (Altrichter *et al.*, 2007; Kenshimov *et al.*, 2017; King and Nomikou, 2018).

Table 1 shows that the pedagogical target is in the development of the professional qualities and conceptual vision of new pedagogical approaches towards the education of school students. The target of the experiment is in the acquisition of an aggregate of pedagogical tricks and ways of activities ensuring the implementation of new pedagogical approaches in the conditions of renewed contents. The result of the teacher's activities at the initial stages is in investigator's revealing of the regulations in the new pedagogical

approaches as a reflection of the internal and external connections of the 'teacher-student' system.

The main target of these activities is in the creation of the organizational-pedagogical conditions for preparation of the future teachers to the implementation of new pedagogical approaches in the conditions of implementation of the renewed contents of the general secondary education. So, the peculiarity of the structure-conceptual model is also its integrative nature manifesting in the order and agreement of all its elements, stability and continuity of their functioning, due to which the investigated preparation has the peculiarities evidencing the internal singularity, integrity of professional development of the future teacher's personality and ensuring the effectiveness of the preparation to the pedagogical activities in dynamics.

As based on the above said, the main peculiarity of the multi-component structure is its integrative nature, then the integration of its components also allows assuming possible levels of expertise according to the value-based motivational, contextual and processual components of the target preparation. The higher is the extent of integration of the components, the higher is their level (Figure 1). The level of the future teacher's preparation to the implementation of new pedagogical approaches in the conditions of renewed contents is expressed in the combination of the criteria and indicators reflecting the qualitative and quantitative characteristics of the components.

Value-based Motivational Component ensures the axiological characteristics of the preparation, axiological mindsets, needs, and motives of the future teacher. It has a regulative function and is manifested in the changes of the occupational reasoning, acceptance of the pedagogical values of the subjective pedagogics, the ability to the building of equal relations, the recognition of the school students' rights to independence, respect of their sense of dignity, and readiness to the work in dialogue.

The contextual component is a managing part of the action and forms the basis for the construction of the internal plan for the management communication of a future teacher. It is based on the theory and implies the presence of knowledge about the new approaches towards planning, needs and age peculiarities of the school students, the methods for the use of the proves/results of the research (observation over the school students of various categories A, B, C)

for further improvement of the pedagogical practice. It is one of the mechanisms contributing to the student's professional development, the vision of his/her own challenges in teaching, and making the decision on the correction of his/her activities.

Processual component presents an aggregate of practical skills and means of pedagogical reasoning that allow the future teacher to implement the personal, axiological mindsets, professional needs and motives together with the special knowledge in the educational process. The presented model with the single system of criteria and parameters of the future teacher's preparedness is the base for the implementation of new pedagogical approaches in the conditions of renewed contents of general secondary education and increases the competitive advantage of the future teacher at the market of educational services.

3.2. Stages of introduction of the model

The introduction of this model implied the conduction of the following stages of the experimental work:

- definition of the initial state of the future teachers' preparedness to the implementation of new pedagogical approaches in the conditions of renewed contents of secondary education by using the tests, surveys, pedagogical observation, and processing of the research results;

- development and testing of the scientific-methodical support of future teachers, contributing to the effective implementation of the structure-conceptual model in the process of professional preparation;

- revealing of the level and dynamics of the future teachers' preparedness to the pedagogical process in the conditions of the renewed contents of the general secondary education.

3.2.1 Summative Stage

The cohort of the experiment participants consisted of 199 students from the O.A. Baikonurov Zhezkazgan University (Table 2). The analysis of the future teachers' state of preparedness to the implementation of new pedagogical approaches in the conditions of renewed contents has shown that their professional values and convictions reflect their own experience of studying at school, and their ideas of the teacher's role were affected by the examples of their own teachers' behavior (Table

3).

The ranking has shown that the basic positions 2;6;9 were estimated by the respondents as not defining the nature of the pedagogical interaction. Non-demanded (rank 7) has become the statement that conduction of the reflective research and the data of the analysis on the effectiveness of the school work are an important assessment factor for the teacher's role. In this case, the students' understanding of the values of the subject-subject interaction in the pedagogical process is rather difficult to represent. The level of the formation of the contextual component in the preparation as a high level of knowledge and ideas of the essence of the planning of a series of lessons considering the new pedagogical approaches was not revealed. The insufficient level of awareness of the value pedagogical positions evidence that during the study of the pedagogical disciplines at the university, the students show a popular phrase 'to lose something important within a bunch of unimportant things'. For them, the primary task during their educational process is the acquisition of the pedagogical contents, forms, and methods not considering the needs and capacities of a school student (Table 4).

When measuring the processual component implying the presence of the skills and knowledge on the medium-term and short-term plans in the context of renewed contents of education, the design of the developing educational environment for the students with the use of the B. Bloom's taxonomy of educational targets, the students showed the critical level of preparedness. The students had the initial data on various approaches in the traditional knowledge-skills aspect of the pedagogical process from pedagogics and the methods of teaching various disciplines (Table 5). There was a lack of readiness to apply to their experience, the need and ability to act based on the analysis and interpretation of pedagogical situations and search for correct solutions.

The analysis of the educational plans and psychological-pedagogical disciplines at the pedagogical specializations showed that they require a supplement which would contribute to the increase in the level of the future teachers' preparedness to the implementation of new pedagogical approaches in the conditions of new standards, and also the introduction of such elective courses as, for example, 'The System of Criteria Assessment at School', and 'New Pedagogical Approaches in the conditions of Renewed Contents of School Education'. These

special courses may replenish the student's areas of challenges in the preparation to the pedagogical activities in the conditions of the renewed standards of education in the 12-year school period.

3.2.2 Formative Stage

As part of the formative experiment, the authors developed the methods for the preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of general secondary education. The methodical preparation of future teachers is defined by the aggregate of knowledge and ideas of the peculiarities of organizational forms, pedagogical methods, and techniques, development, and upbringing in the integral pedagogical process (Abdullina, 1999; Kirillov *et al.*, 2015; Ionova *et al.*, 2018). The reformative stage was implemented gradually, in accordance with the research logic. To organize and order the actions of the experiment participants on the achievement of the target of the stage, the authors developed elective course 'New Pedagogical Approaches in the conditions of Renewed Contents of Education', aimed at the systematization of the concepts and ideas of future teachers on the methodological base of new pedagogical approaches in the conditions of renewed contents of general secondary education and development of the competencies on their implementation in an authentic class.

Except for the presence of the fundamental knowledge in the sphere of pedagogics, future teachers also require the systemic work on the reception of additional information, which would allow them more substantiated conclusions about the vision of their activities in their classroom on a daily basis and of the pedagogical strategies they are to apply in their practice. For a future teacher in the process of decision-making, important things are the student's interests and the comprehension of what professional duties are necessary for a teacher to provide support for each student in achieving success and for the continuation of development of their own knowledge and skills both as a person and as a member of a professional team (Bransford *et al.*, 2005; Sarybayeva *et al.*, 2018).

The methodological base of the course contains the ideas of socio-constructivists pedagogical approaches (Hattie, 2009; Lyashenko and Mineeva, 2018) because out of the number of the modern scientific approaches used by various systems of secondary education, more popular

and highly appreciated in the world are the approaches based on the constructivists' pedagogical theories. They are based on the statement that the development of the students' reasoning takes place in the conditions of the interaction of the available knowledge with the new one or with the one obtained at the lesson from various sources: from the teacher, from the classmates, textbooks, etc.

For this course, the authors developed the study guide 'New Pedagogical Approaches' and methodical recommendations for the pedagogical practice of the bachelors, the contents of which reflect the new pedagogical approaches in the conditions of renewed contents of education of the school students. The guide contains the questions contributing to the critical reasoning of the future teacher over the reasons of low motivation of particular school students towards the education, the reasons of low academic performance, criteria for assessment of their achievements, practical tasks for independent and creative work on planning a series of lessons, other additional materials necessary for the acquisition and practical implementation of the main ideas of the course. The methodical recommendations of the practice imply the stage of immersion, which is a kind of 'a fit check' and the adaptation to the pedagogical activities. Each stage of the practice had its own targets, tasks, and algorithm of actions.

Stage 1 – Diagnostics-Orientation. It implies the revealing of the level of initial skills and knowledge at the analysis and observation of the pedagogical process in an authentic class. To assess and reveal the state of the 'teacher-student' system, the vision of the pedagogical strategies, such seminars as 'Approaches to the Research of a Lesson', 'Peculiarities of Observation over the Students of Various Categories', 'Choice of the Pedagogical Strategies and Approaches' are held. The discussion of such themes allows the students to make sure that all the organization-activity, information, and communicative connections emerging in the process of pedagogical interaction reflect the target-setting in the education.

Stage 2 – Activity-Practice. This stage is professional testing for the students, which contributes to the professional motives and reveals the areas of professional challenges. The medium-term and short-term plans are being developed and implemented under the observation of the moderators, which reflect the new pedagogical approaches as part of the new framework educational programs.

Stage 3 – Correction-Analysis. The target of this stage was the revealing of the trends in the development of the students' competencies in the implementation of new pedagogical approaches. The dynamics of their formation and development was analyzed and assessed. The obtained data on the level of the students' preparedness to the implementation of new approaches in teaching and development allowed conducting adequate correctional and methodical influences and changes in the contents of the practice.

Stage 4 – Assessment-Result. The task of the stage included the definition of a real level of the future teachers' preparedness to the implementation of new pedagogical approaches in an authentic class, forecasting and projecting of the further education-methodical work on the improvement of the process of professional preparation to the implementation of new pedagogical approaches in the conditions of the renewed standard at the last courses of study.

3.2.3 Control Stage

At this stage of the experiment, to define the level and the revealing of the dynamics of preparedness to the implementation of new pedagogical approaches in the conditions of renewed contents of education, the authors conducted diagnostic assessments. The data of these assessments showed the changes in the preparedness of the future teachers' experimental group. There were no significant changes in the level of preparedness of these competencies among the students of the control group (Table 6, Figure 2).

The positive changes in the levels of target preparation are of a regular nature because the parameters of the students' critical level significantly decrease, and vice versa, the parameters of allowable and optimal level increase. The conclusions have been confirmed by the results of the fourth 'assessment' conducted by the end of the experimental work.

The changes taking place during the experiment allow seeing the dynamics of the future teachers' preparedness to the implementation of new pedagogical approaches at a lesson (Figure 2). Based on the formative influence, the significant changes took place in the value-motivation, contextual, and processual components of the students' preparedness.

According to the results, the statistical significance of the differences in the levels of the target preparation among the students of the

control and experimental groups was revealed. The authors used the criterion calculated by the following formula:

$$x^2 = \sum \frac{(f'_i - f_i)^2}{f'_i + f_i}, \quad (1)$$

where:

x^2 – value of the criterion;

f'_i and f_i – frequencies of two matched samplings;

\sum – summation symbol.

The results of the calculations are presented in Table 7. As a result of the calculations, the value of criterion x^2 (24.6) appeared to be more than the table one for 1% of the significance level. It means that the data about the level of preparation among the students of the control and experimental groups are significantly differenced; moreover, these differences are statistically significant. It makes it possible to use the developed system of pedagogical conditions of the future teachers' preparation to the implementation of new pedagogical approaches in the conditions of renewed contents of education in the process of general preparation of the teachers to the professional activities.

Thus, one may conclude that the suggested system of pedagogical conditions for preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of the education is optimal and may serve as a basis for the introduction to the educational process of the other universities.

4. DISCUSSION:

The study of the theory and practice of general secondary education has shown that there is a lack of special research devoted to the problem of preparation of future teachers to the implementation of new pedagogical approaches in the conditions of the 12-year school period based on the renewed contents of education (Adamkulova, 2016; Levkina and Fedoseyeva, 2018; Suh and Park, 2017). While the peculiarities of development of general pedagogical skills are considered in the works by O.A. Abdullina (1999), Khmel (1998), Chekalev (Chekalev *et al.*, 2015),

Dvoryankina (2007). While the peculiarities of new pedagogical approaches based on the constructivists' pedagogical theories are considered in the works by Hattie (2009), Stronge (Stronge *et al.*, 2011), and Mercer (2005). All the

approaches are focused on the student's activity, constructive adjustment of the activities in accordance with the target results, and the importance of the response. The essential characteristics of the 'pedagogical study' are considered alongside the ways used by the teacher for the transfer to the students of this pedagogical 'mechanism'.

The driving force for the 'pedagogical study' is, according to Hattie (2009), a so-called 'metacognition'. By the 'metacognition' Hattie means the capacity of tracking, assessing, controlling, and measuring the way individual reasons and learns. These positions are relevant for the student's understanding of the modern school's specificity. In this process, the future teacher starts comprehending the need in the student's support in the pedagogical process: to understand the requirements implied by the educational task, to learn particular reasoning processes and the principle of their operation, to develop and elaborate the strategies for the performance of tasks, to choose the strategies most suitable for the solution of a particular task.

The study by the students of various socio-constructivist theories (Vygotsky, 1978, Wells, 1999; Sitnikova *et al.*, 2018) allowed them to make a series of important conclusions: first, in the educational process, the teacher should provide the means of language and cognition necessary for the independent and successful performance of a school task by a student. Then, to design the behavior and the language, to acquaint the school student with the cognitive processes and procedures he/she is involved, gradually leading the school student to the ability to act competently, confidently and independently.

In the course of the analysis of socio-constructivist pedagogical approaches, the authors established that the school teachers should focus not on their own teaching, but on the development of students' ability to learn. For this purpose, a teacher should create such an educational environment, due to which the students will actively participate in the educational process, rather than passively receive the information. The main thought is concluded in the fact that the information is transferred, while the knowledge and understanding are formed in the students themselves, while a teacher should support them in this process. Notably, in the

existing practice of the teachers, a knowledge-focused approach still prevails, which significantly decreases the quality of education and the children's rating in the PISA international research. At the same time, the pilot research of introducing the 12-year education in the schools of the republic implementing new pedagogical approaches in the conditions of renewed contents evidence that at the corresponding organization of professional preparation of future teachers to the pedagogical process in the new conditions increase their competitive advantage at the market of the educational services.

5. CONCLUSIONS:

The authors established that the preparation of future teachers to the implementation of the new pedagogical approaches in the conditions of renewed contents of education and the transition to the 12-year education will be successful, if the students' preparation model developed on the basis of socio-constructivist approaches, is implemented based on the integration of the subject, technological and social-role-playing contents, while the methods reflect the new standards. The stated positions contribute to the provision of the strategies for the equation of the school students' chances to the qualitative education and personalization of education.

The materials of this paper may be helpful to the school teachers and the university teachers of pedagogical specializations, supervisors of the education department in the conditions of the implementation of the 12-year school new contents. In the process of the research, the authors revealed the areas of challenges connected with the search of the mechanisms that would allow future teachers to overcome the psychological and professional barriers, and the stereotypes caused by their own experience of the traditional pedagogics.

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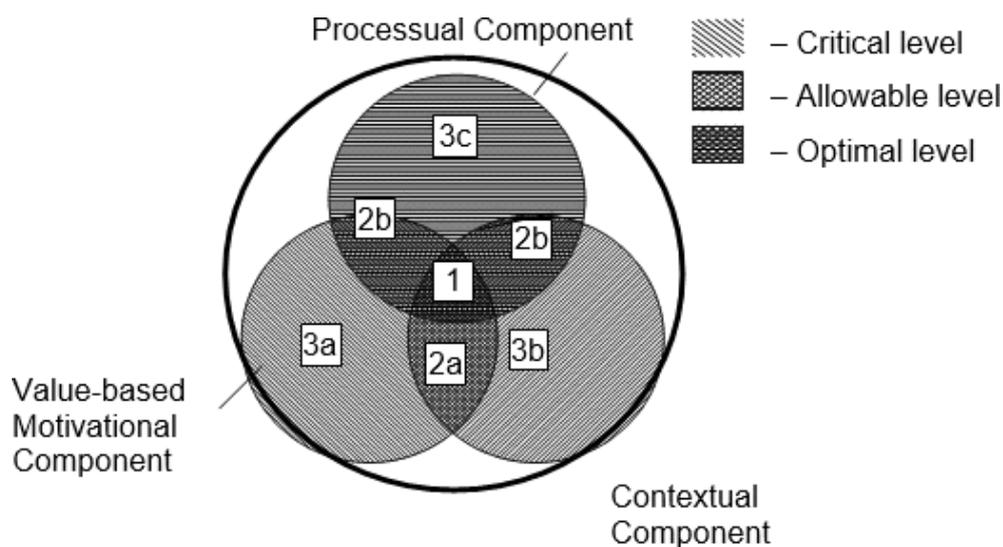


Figure 1. Structure of the level preparedness of the future teacher to the implementation of new pedagogical approaches in the conditions of renewed contents of general secondary education

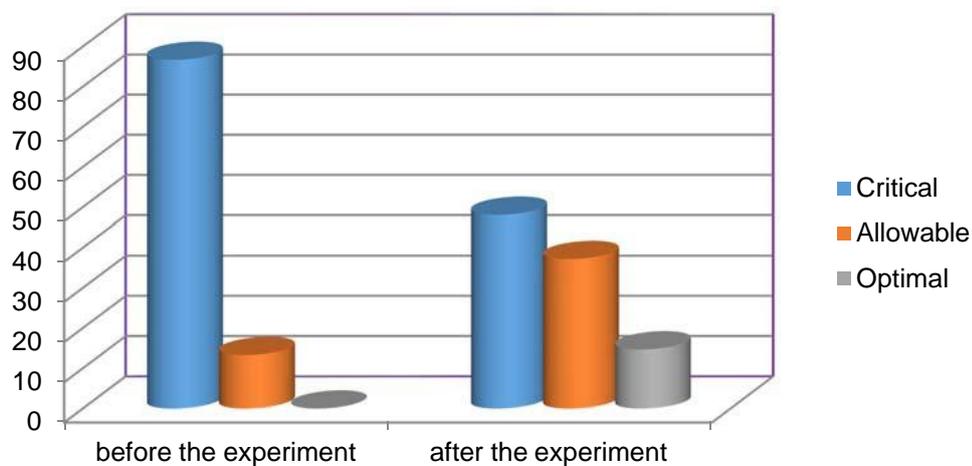


Figure 2. State of the future teachers' preparedness to the implementation of new pedagogical approaches in the conditions of renewed contents of education at the beginning and the end of the experiment (%)

Table 1. Activities of future teacher – investigation of a lesson

Stages	Tasks	Contents	Technologies
Theoretical stage	<p>1 To study the social order to the preparation of the specialists at the university, caused by the strategical benchmarks in the development of education and society</p> <p>2 To define the level of development of the theory and practice of the preparation for the implementation of the new pedagogical approaches</p> <p>3 To clarify the essence of such concepts as 'preparation', 'new pedagogical approaches'</p>	<p>Distribution of the initial theoretical positions in the implementation of the new pedagogical approaches in the conditions of general secondary education, targets, and tasks of the search</p> <p>Analysis and assessment of the generalized experience in the implementation of the new pedagogical approaches according to the State Compulsory Educational Standard of the Republic of Kazakhstan 2012</p> <p>Development of the model and process of the preparation for the implementation of new pedagogical approaches</p>	<p>Research Methods:</p> <p>1 Theoretical Analysis and Evaluation</p> <p>2 Content Analysis</p> <p>3 Analogy</p> <p>4 Comparison</p> <p>5 Abstraction</p> <p>6 Modeling</p>
Summative stage	<p>1 To define the state of the professional preparation of a student to the pedagogical activities in the conditions of renewed contents of secondary education</p> <p>2 To prepare the pedagogical conditions for the professional preparation of students to the acquisition of new pedagogical approaches in accordance with their needs, peculiarities, and abilities</p>	<p>Research of real state of preparedness of the pedagogical experts and future teachers to the implementation of the new pedagogical approaches</p> <p>Preparation of pedagogical conditions ensuring the implementation of the model for the students' preparation for the implementation of the new pedagogical approaches in the context of renewed contents of secondary education</p>	<p>Research Methods:</p> <p>1 Study of the process and products of activities</p> <p>2 Observation</p> <p>3 Survey</p> <p>4 Testing</p> <p>5 Self-evaluation</p> <p>6 Analysis</p>
Formative stage	<p>1. Experimental work on testing the methods for the students' preparation for the implementation of the new pedagogical approaches:</p> <ul style="list-style-type: none"> - practical modeling at the lessons; - research of the lesson during the ongoing pedagogical practice. <p>The preliminary collection, processing, and interpretation of the obtained data</p>	<p>1 To test the effectiveness of the developed model of the students' preparation for the implementation of new pedagogical approaches in the context of renewed contents of education</p> <p>2 To define the level of student's preparedness to the implementation of new pedagogical approaches in the conditions of renewed contents of education in the course of the practices</p>	<p>Research Methods:</p> <p>1 Teaching Experiment</p> <p>2 Observation</p> <p>3 Comparison</p> <p>4 Methods of Mathematical Statistics</p> <p>5 Analysis</p>
Final stage	<p>1 To generalize, interpret and assess the results of testing the model of the students' preparation for the</p>	<p>Systematization, generalization, and assessment of the obtained results of the experimental</p>	<p>Research methods:</p> <p>1 Assessment</p> <p>2 Analysis</p>

implementation of the new pedagogical approaches in the context of renewed contents of education	work at the methodological seminars, international conferences, scientific journals, and public media	3 Synthesis
2 To present the interpretation of the results of the experimental work		

Result: Preparedness of future teachers to the implementation of the new pedagogical approaches in the conditions of renewed contents of general secondary education

Table 2. The cohort of the experiment participants

Specializations, code of specialization	Number of Students		
	experimental gr. (EG)	control gr. (CG)	total
5B010200 Pedagogics and Methods for Primary Education	11	13	24
5B011900 Foreign language: Two Foreign Languages	19	22	41
5B011300 Biology	40	42	82
5B010900 Mathematics	26	26	52
Total:	96	103	199

Table 3. Ranking of the statements about the teacher's role in the pedagogics in the conditions of the renewed contents of school education

Professionally Significant Statements about the Role of Teacher in the Pedagogical Process	Rank	
	Future teachers	Experts
1. Teachers should be skillful in using the technique of 'open door', inviting their colleagues to the classrooms for the observation, mentorship, and assessment.	3	4
2. Teacher should focus on the achievements of his/her school students.	8	8
3. The obligation of a teacher is continuous improvement of his/her knowledge and skills.	2	9
4. All teachers are responsible for the influence on their colleagues and improvement of the practice in school.	4	1
5. In order to be a good teacher, you must be able to collaborate with the colleagues to acquire new professional knowledge.	5	2
6. Teachers are collectively responsible before the society, community, parents and school students for the quality of the education provided by their school	10	6
7. Teachers should contribute to the development of the educational policy through the expression of their opinion both at school and beyond.	6	3
8. The conduction of the reflective research and the data of the analysis of the school work effectiveness are an important assessment factor of the teacher's role.	7	10
9. The plan of a lesson must be always to a greater extent joint work, rather than an individualized task.	9	7
10. Good teachers consider themselves to be responsible for the social and personal development of their school students.	1	5

Table 4. Distribution of the test persons according to the level of formation of the contextual component (%)

Parameters	Levels		
	Optimal	Allowable	Critical
Knowledge of socio-constructivist theories and their influence on the quality of the pedagogical process	-	46.1	53.9
Knowledge of peculiarities of the renewed contents of education	-	32.9	67.1
Knowledge of the pedagogical target and main tasks in the conditions of renewed contents of education	-	44.6	55.4
Knowledge-understanding of the peculiarities of planning of a series of lessons considering new pedagogical approaches	-	38.7	61.3
Knowledge of the mechanisms for using the proves/results of the research at the planning of the lessons	-	43.9	56.1
Average Figure	-	41.2	58.8

Table 5. Distribution of the test persons according to the levels of formation of the processual component of the target preparation (%)

Parameters	Levels		
	Optimal	Allowable	Critical
The skills and knowledge in diagnostic of interests, peculiarities, and abilities of the students for the purposes of organization of the pedagogical process and considering their areas of difficulty	-	23.9	76.1
The skills and knowledge in composing the medium-term and short-term plans in the context of renewed contents of education	-	45.3	54.7
The skills and knowledge in the design of the developing educational environment for the student and the selection of the corresponding program-methodical means of conducting the pedagogical process	-	61.4	38.6
The skill of using reasonable forms and methods of interaction, motivation, and assessment of the students' independent work results	-	39.3	60.7
Average Figure	-	42.5	52.0

Table 6. The dynamics of changes in the level of preparedness of the future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of education (%)

Levels	Initial state	Experimental Group				Control Group			
		1	2	3	4	1	2	3	4
Critical	86.7	82.3	77.4	50,9	48.1	86.7	82.2	79.9	76.8
Allowable	13.3	17.7	22.6	44.3	37.2	13.3	17.8	20.1	23.2
Optimal	-	-	-	4.8	14.7	-	-	-	-

Table 7. Results of testing the statistical significance of the differences in the levels of preparation of future teachers to the implementation of new pedagogical approaches in the conditions of renewed contents of education

Levels of Expertise	f'_t	f''_t	$(f'_t - f''_t)^2$	$f'_t + f''_t$	$\frac{(f'_t - f''_t)^2}{f'_t + f''_t}$
Critical	76.8	48.1	823.69	124.9	6.59
Allowable	23.2	37.2	196	60.4	3.25
Optimal	-	14.7	216.9	14.7	14.76

$\Sigma = 24.6$; $x^2 = 24.6$; $P < 0.01$

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