
МОДЕРНИЗАЦИЯ ПЕДАГОГИЧЕСКОГО ОБРАЗОВАНИЯ |
MODERNIZATION OF TEACHER EDUCATION

Activity Approach in Teacher Education

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The paper addresses the subject matter and outcomes of the project on modernization of teacher education in Russia (2014—2017) aimed at enhancing professional development of future teachers and bringing it into compliance with the professional standard for teachers as well as with the federal state educational standards (standard-driven reform). I describe the theoretical concept behind the new activity-based model of teacher training which was developed and subsequently tested in the course of the project implementation. Also, I highlight several unresolved issues in teacher training and put forward some suggestions for the next stage of teacher education development.

Keywords: teacher education, activity approach, teacher, teacher training, professional standard, federal state educational standard, professional exam.

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Деятельностный подход в педагогическом образовании

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В статье рассматриваются содержание и итоги проекта модернизации педагогического образования в Российской Федерации (2014—2017), направленного на профессионализацию подготовки педагогов и при-

ведение в соответствие ее результатов с требованиями стандарта профессиональной деятельности педагога и федеральных государственных образовательных стандартов (ФГОС) общего образования (standard driven reform). Представлено теоретическое содержание новой модели подготовки педагогов, разработанной и апробированной в ходе реализации проекта, основанной на деятельностном подходе. Показаны нерешенные проблемы в подготовке педагогических кадров и сформулированы предложения к следующему этапу развития педагогического образования.

Ключевые слова: педагогическое образование, деятельностный подход, учитель, подготовка учителя, профессиональный стандарт, Федеральный государственный образовательный стандарт, профессиональный экзамен.

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Introduction

The present work comprises two interrelated papers. *Communication 1. Activity Approach in Teacher Education* considers the project Modernisation of Teacher Training in Russia (2014—2017). It describes the reasons and grounds for the project, the theoretical content of a new model of teacher training based on the activity approach in psychology. The model was developed and tested during the implementation of the project. *Communication 2. Proposals for the Development of Teacher Education in Russia* covers the results of the modernisation project, its unresolved issues and suggestions for the current stage of the development of teacher education. The content of Communication 1 has been detailed in the author's earlier publications [12; 13; 14; 15]. The present work provides some insights into the theoretical approach developed by the author on the basis of Communication 1. Communication 2 involves a description of the most urgent problems facing teacher education today, which were not resolved within the framework of the modernisation project (2014-2017), as well as the author's point of view on the most important areas for the further development of teacher education.

Communication 1. Activity Approach in Teacher Training

Project for the Modernisation of Teacher Education (2014—2017) — Reasons and grounds for the project

The reform of teacher education in Russia, which began in 2014 and continued until 2017, can be seen as among the most radical attempts to change the teacher training system during the entire post-Soviet period.

The objective grounds for the project for the modernisation of teacher training include the observed inconsistency between the requirements of the new standards of general education approved in 2010 and the competences developed in teacher training programmes, which have not fundamentally changed for several decades.

At some point, it became clear that the graduates of such programmes would be incapable of implementing either the requirements of the new Federal State Educational Standards (hereinafter FSES) [21] or those stated in the more recent Professional Teaching Standards (2013) [24], which are considered (by their authors) as comprising a model for the professional activity of teachers aimed at achieving the goals defined in the FSES.

In our opinion, the main content of the modernisation project (2014—2017) consisted in resolving this contradiction between the new requirements for teachers and the outdated system for their training, both in terms of graduates' educational results and the approaches enshrined in programmes for their professional formation.

Subjective reasons for the dissatisfaction with the quality of teacher education on the part of the expert community and to some extent reflected in public discourses, which contributed to the launch of the modernisation project, include: a lack of stable positive dynamics in international education assessment; double negative selection affecting routes to the teaching profession and a decline in the social prestige of teachers; complaints from school administrators concerning the insufficient practical training of graduate teachers; a low graduate employment level in schools combined with a high dropout rate of young teachers due to insufficient preparation for independent professional activity and lack of postgraduate support [12].

While some of these reasons are directly related to the actual state of teacher education, most are concerned with problems associated with professional activity and the education system as a whole. However, as with the "pedagogisation" of social problems, i.e., attributing responsibility for many social problems to deficiencies in the quality of education, there is a tendency within the education system itself to shift responsibility by identifying a "universal scapegoat" in the guise of teacher training quality.

The immediate reason for launching the project to modernise teacher education was the "failure" of pedagogical universities identified in the first monitoring of the effectiveness of universities conducted in Russia (2014). Even taking into account reservations about the imperfect methodology used for assessing efficiency, this identified failure was more significant among pedagogical

universities than other higher education institutions. These results added to the inner conviction of officials that this failure was not accidental, but to be expected since reflecting the extreme archaism of pedagogical universities, not only in terms of the quality of their teacher training programmes, but also as a sector of Russian higher education in general.

One approach, considered as an effective means of increasing the efficiency of such universities and actively used during this period, took the form of partnering "ineffective" universities with "effective" ones. In the context of teacher education, this strategy has already been partially tested through the merging of pedagogical institutes with traditional universities (for example, when organising a number of federal universities). The main objections of some experts (which were fortunately taken into account by the management system) identified the impossibility of resolving problems affecting this segment through the "relocation" of teacher education alone. According to these critics, a more effective solution consisted not so much in a rearrangement of the "cubes" — i.e., reorganisation — but rather in the need to address a long-standing need to improve the quality of education taking place in them — i.e., modernisation. In addition, the data available at that time indicated the emergence of additional problems in the affiliated pedagogical universities rather than an improvement in the quality of teacher training carried out in them. Thus, for example, a large traditional university showed less interest in improving the quality of teacher education or in interacting with the general education system as a whole. Mergers were often accompanied by a reallocation of human resources to ensure the implementation of teacher training programmes in favour of classical subject departments; the elimination of duplication in practice led to the "survival" of staff working in classic university departments, who may have been far

from the best in terms of quality. While there were certainly examples of more optimal reorganisation, they did not refute the general conclusion that such reorganisation is not a universal and effective means of improving the quality of teacher training programmes.

***Project for the Modernisation
of Teacher Education (2014—2017) —
Search for new content.
Professionalisation***

The initial methodological grounds for the project [15; 16] involved identifying the appropriate primary teacher training subject matter for effectively implementing professional standard requirements to form not only subject-, but also metacognitive- and personal educational outcomes in students.

Traditionally, such content refers to a historically established set of academic disciplines, including disciplines of subject-, general pedagogical-, methodological- and psychological training of teachers. However, the result of teacher education based on such educational content did not create an obvious opportunity for teachers to fully implement the new requirements of the FSES for General Education or to perform the professional actions necessary for this as described in the professional standards for teachers.

As a rule, traditional approaches for improving this model involved strengthening one or another component (from subject to psychological) or changing the balance between theoretical courses and the volume of fieldwork with students. Having already been used in previous approaches to improving teacher education [23], this fits well into the general conceptual framework based on the hypothesis that mastering a particular set of predominantly theoretical disciplines with their subsequent illustration exemplification in practice can effectively prepare a future specialist for independent professional activity.

In essence, this highly successful model of higher education [12], which appeared in

the middle of the 17th century in the context of specific socio-economic circumstances applying at that time in Europe, was for several centuries practically the only possible approach, displacing all previous forms of obtaining professional education (built on the “master—apprentice” pattern). In the field of teacher education, the approach was characterised by the transition from teacher training directly placed on the basis of schools, which acted as an analogue of modern clinical settings and reference samples for teaching activity (“normal schools / école normale”), to training carried out at universities. This process was accompanied by gradual recognition of teaching as a professional activity — that is, a complex area, requiring a significant amount of practical skills as well as knowledge, and not only in teaching a subject but also in pedagogical theory, child psychology and an understanding of age-related development capabilities, as well as in humanities. The increasing complexity of the goals of general education and the transition from the task of “eliminating illiteracy” to those involved in obtaining a systematic and fully-fledged education contributed to an expansion and deepening of the knowledge in various fields considered necessary for this purpose and its integration into teacher training programmes. However, in our opinion, the success of this model can be questioned on the basis of two fundamentally different objections.

Within this model, the professional development of a future specialist is associated, first of all, with the development of the content of academic disciplines and the “advancement” of the student through the list of the courses defined in the curriculum programme. Neither objectively (in terms of the design of the programme itself) nor subjectively (for the majority of students enrolled in it) can professional tasks be adequately defined in terms of preparation for them by a student at one or another “point” within the programme.

Despite such programmes being normatively referred to as “basic professional educational programmes”, they objectively turn out to be more like basic “educational and professional programmes” or simply “educational programmes”. In relation to the considered area, this conclusion is confirmed by the lack of assignment of professional qualifications. Graduates of such programmes receive not a teacher’s qualification, but a bachelor’s qualification in Pedagogical Education (PE) with the options Psycho-Pedagogical Education (PPE) and Secondary Professional Education (SPE) [21; 22].

In subjective terms, students fail to understand why they study numerous disciplines (mainly of the general pedagogical cycle) and struggle to determine the connection between those disciplines and the subject of their future professional activity. This leads to a crisis of educational motivation for a significant part of students [25], who reasonably expect that, unlike their previous experience in school, a long-awaited connection between the content of their learning and subsequent activity (in this case, professional) will be realised as a result of having entered higher education professional programmes. However, when studying numerous disciplines that subjectively have a very distant relationship to anticipated future teaching activity, this connection remains obscure.

The second group of difficulties in this model of higher education is associated with the lack of a single criterion for assessing the extent to which training programmes constructed on the basis of “knowledge” adequately prepare their graduates for future professional activity. With this approach, it remains unclear how grades in Educational Psychology or Theory of Learning courses are related to the actual level of preparation of a graduate for professional activity. In fact, the propagation of programmes based on the disciplinary approach can testify formally and more or less confidently about

the knowledge of graduates, but only very indirectly and approximately concerning their professional readiness for work. This is confirmed by both international studies (for example, TALIS) (17) and national surveys of school principals [1; 2], which actually say the same thing: graduates come to school with good subject and theoretical training, but are not sufficiently prepared for the activity of teaching itself, which most often becomes the reason for quitting the profession (especially in the absence of institutionalised forms of support, such as mentoring and postgraduate support).

The problem of insufficient professionalisation of teacher training programmes based on the disciplinary (knowledge) approach does not arise due to knowledge not being required in the future profession or the assumption that it is quite possible to limit oneself to a certain set of practical teaching techniques. On the contrary, when recognising teaching activity as a professional activity (as opposed to an occupation), it must be simultaneously understood that this very professional status is based on the large amount of accrued professional (including interdisciplinary) knowledge that is unique and specific only to this profession. However, mastering this knowledge irrelatively with the future activity, i.e., not as tools for this activity but as an end in itself, not only leads to a crisis of educational motivation, but in fact does not allow this to be mastered at all.

When speaking about the acquisition of any knowledge, including professional knowledge, it is necessary to determine at what level it has been mastered: at the level of formally memorised definitions that are forgotten immediately after the exam, at the level of templated approaches for implementing a limited set of routine practical actions, or at a meaningful level that involves professional actions, with consideration to various individual characteristics of students and social contexts of their learning based on deep theoretical knowledge. In

terms of the cultural-historical approach [3], the problem is not so much that there is too little practice in traditional teacher training programmes, but conversely that they offer too little theory, in the sense that most graduates of such programmes do not master professional knowledge at the level of concepts, but rather at the level of pseudo-concepts or complexes [43].

The prevalence of the knowledge/disciplinary approach leads in practice to the absence of uniform criteria in assessing the professional training of graduates of different programmes, which in general seems quite acceptable for as long as there is no unified normative understanding of how such a professional activity should be carried out in this activity area. Indeed, if there is no common understanding of what is considered to be “good teaching”, then there is consequently no need for a common approach for assessing the professional skills of future teachers. However, if such an understanding arises and is normatively consolidated, it then becomes necessary to understand to what extent this or that teacher education programme was able to equip its graduates with a certain set of knowledge and to ensure their readiness for professional activity in accordance with the requirements enshrined in the regulatory document. This is exactly what happened following the approval of the teacher’s professional standards, which normatively fixed the requirements for professional activity aimed at achieving the educational goals of the FSES for General Education, thereby serving as the basis for building a unified content of teacher training and assessing a teacher’s readiness for independent professional activity.

The above considerations show the impossibility of fully implementing the additional complexity of the FSES aims and model requirements for the professional activity (Professional Standards) of teachers aimed at achieving these goals through merely

“cosmetic” changes in the existing system of disciplinary training of future teachers. Such aims and requirements require a much more radical transition from a knowledge-based model of teacher education to one based on professional development.

Despite the distinctive character of teacher training, the need for its transformation towards preparation for professional activity is not unique. Similar processes have occurred at the same time and even earlier — for example, in medical and technological higher education segments. One of the most striking examples of this consists in the development of a new approach to engineering education undertaken by a number of leading European and American universities. The Conceive Design Implement Operate (CDIO) standard is based on mastering the complete production cycle of engineering goods / projects (from concept to implementation) as an activity content that structures the entire process of training a future engineer (10).

***Project for the Modernisation
of Teacher Education (2014—2017) —
Professional activity of a teacher.
Standard. Professional thinking
of a teacher***

When considering the professionalisation of teacher education and the transition from the knowledge (disciplinary) content of teacher training programmes to professionally oriented content (aimed at preparing for teaching), it should be noted that teaching activity can be implemented across an extremely wide variety of approaches, ranging from what would be more accurately described as an occupation to a self-motivated professional activity, which can be extremely complex in terms of its goals and structure.

Thus, the ongoing discussion about whether teaching is actually a simple occupation or conversely one of the most challenging professions is fueled by the wide range of possible forms teaching activity can take.

Moreover, the ease with which any person having completed higher (nonpedagogical) education or even a student may enter teaching due to a specific socio-economic context (e.g., a shortage of teaching staff and the impossibility of quickly filling a gap with standard programmes for teacher training) reflects the implicit idea of the teaching profession as an occupation available to any normal adult. Nobody generally entertains the idea that an adult representative of any profession — for example, a musician — can be admitted to the construction of a complex engineering structure — for example, a bridge — without any verification of his/her professional competence in bridge construction. At the same time, the generally acceptable converse idea about the possibility of a minimum barrier (or its complete absence) for entering the teaching profession indicates two important views about this profession.

Firstly, this represents a view of the teaching profession as relatively simple and not requiring any significant knowledge in terms of complexity or volume that would imply long-term, deep mastering of highly sophisticated programmes.

Secondly, this view suggests the exceptionally wide potential repertoire of a teacher's activity, including at a simple level in the absence of a normatively established means of implementing such activity (for example, similar to protocols and clinical guidelines governing the activities of doctors) given delayed feedback between the activity itself and its results (in the form of student learning outcomes).

Due to the almost immediate manifestation of errors in the professional activities of a doctor or civil engineer revealing the incompetence of the individual specialist who committed them, specialists who are not adequately prepared are not admitted to the profession.

Conversely, an unprepared person can be admitted to the teaching profession due to the delayed results of teaching outcomes

(above all, the results of “complex learning”: mastering of ideas and concepts, development of thinking) and the lack of clearly documented implementation norms by the professional community or state.

However, the transition from relatively simple educational goals — reading, writing and arithmetic — to more complex educational goals (formation of scientific concepts and worldview, development and socialisation) inevitably complicates the content and tasks of teaching activity, limiting the profession to those persons who have received special, long-term training and mastered the necessary professional competencies for this activity (including theoretical knowledge).

As part of the parallel process of the “selection” of approaches for implementing such a complex teaching activity, some simple and routine methods of “broadcasting” teaching are rejected as not obviously corresponding to the new and more complex goals of education. This generally leads to a narrowing of the initially wide range of socially acceptable teaching methods.

The final stage of such a “selection” and evolution of professional activity is formed by the development of professional activity standards. Professional standards translate an agreed vision of what a professional activity should be into a normative field, i.e. describing this activity as a normative requirement for all teachers or providing an example of best practices that are actually available to a minority of specialists but considered to be a guideline for the professional development of all.

The normative role of the professional standard of the teacher's activity (as a strict normative requirement for any teacher or as a “soft” guideline for professional development) is to significantly limit the possibilities for the exceptionally wide range of teaching activity that existed prior to its introduction.

Being derivative of the educational goals set by the FSES for General Education, the standards of professional activity become not so much a “recipe” for constructing

teaching activity for any teacher but rather a generalised model for such activity, thus providing significant opportunities for their creative implementation (which are, however, much narrower than in the absence of such a model).

At the same time, these standards form a basis for constructing the professional content of training programmes [36], describing, in contrast to the traditional (disciplinary) approach, not what knowledge graduates should master, but rather what professional problems they should learn to solve within the framework of their future activity, what professional practices they must master and what theoretical knowledge and practical skills they need to develop in order of reaching this goal.

Finally, the standard of professional activity serves as the basis for building a system for assessing the extent to which graduates have been adequately prepared for professional activity. Opportunities for building a unified and objective system for assessing graduates on a universal activity basis (for example, in the form of a professional or demonstration exam or a portfolio filled in not by a university teacher, but by experienced mentors on practical bases) arise due to the system being regulated by the same professional standard as the generalised model of teachers' activity that ensures the tasks of the FSES.

***Project for the Modernisation
of Teacher Education (2014—2017) —
Technologies for realising the activity
approach.***

***Professionally-oriented modules
as educational units of the activity
approach***

The Decree of the President of the Russian Federation [20] and the corresponding Order of the Government of the Russian Federation [9] became the normative basis for the project initiation.

The main focus of the modernisation of teacher education consists in the transition

from a knowledge-based (disciplinary) paradigm to one based on acquisition of the content of future professional activity.

Although the educational results of graduates of the modernised programmes must meet the requirements of the professional standards for teachers, these requirements do not automatically and unambiguously determine the content of education; still less, the approach to organising the educational activity of students in when assimilating this content.

The method developed for achieving this goal within the framework of the Project for the Modernisation of Teacher Education (new results that meet the requirements of the professional standards) can be described as an activity-based approach to developing teacher training programmes.

At the same time, the content of educational programmes involves not so much the study of a set of academic disciplines, i.e., knowledge that will be in demand in future professional activity, but also mastering (within the educational programme) the professional activity itself, including the necessary knowledge as a component of professional tools for the acquired activity. Analogically to V. V. Davydov's view [6; 7; 8], the notion of the Professionally Oriented Module represents a conceptual "cell" of such an activity programme, which plays the role of the primary educational unit within the framework of the approach under development.

The term "module" has already existed in the normative field for a long time, appearing almost simultaneously with the transition to the two-tier higher education system that followed Russia's ratification of the Bologna Agreement [22]. Although, following its migration from foreign normative documents to Russian standards and then to curricula, the term firmly "settled" in numerous documents as a possible alternative to the term "academic discipline" this had no influence either on the curricula themselves, or on the

content of the preparation process. In most cases, it was assumed in a form of attribution of a number of disciplines similar in name or close to the subject matter to some formal unity, replacing the previous term “cycle”, which had been in use for decades. It is important to note that in the above described meaning of the term “module”, there is no question of any change in the contents of the academic disciplines themselves (formally included in the module) or the technology of mastering them. Thus, a “module” comprises an element of the same disciplinary curriculum, but one that has a larger external structure. Conversely, an actual transition to the construction of teacher training programmes based on the activity approach would presuppose a different way of forming the very structure and educational content of the module [15; 16]. If comprising the main educational unit of such programmes, a professionally oriented module is responsible for the formation of readiness and ability to perform professional actions aimed at solving a certain typical professional task, whose content is mastered by future teachers in the process of studying such a module. It is clear that this goal cannot be achieved solely by combining various exclusively theoretical sections necessary for mastering professional actions. Moreover, if limited to the university classroom, it is impossible to master the labour and professional activity function within the framework of the module. Such modules should be supplemented with a hefty dose of practice, not so much to illustrate the theory, but to pose the problem of the implementation of a professional action (“professional probe”), work out its method components in a special laboratory and educational environment (practicum) and master the professional actions themselves in interconnection with “tacit” knowledge of experienced teachers on a fieldwork (in a real educational organisation).

Thus, each module turns out to be an integrated practical-theoretical unit aimed at

the formation of a certain set of professional actions that correspond to the Professional Standards for Teachers. The educational content of the module should include the contents of those theoretical disciplines or their sections, which together provide an opportunity to form the knowledge, skills and professional actions related to the implementation of a specific labour function (or functions) of a future teacher.

In other words, a professionally oriented module is a model for solving a typical professional problem, but at the same time it is a way of mastering the professional activity itself through this model in all the variety of its actual or possible conditions of execution.

At its first stage, the study of the module’s content starts from performing the professional actions which are necessary for fulfilment of a typical professional task modelled in this very unit of the program (module). This student teacher individual attempt to execute a certain professional action (“professional probe”) which is usually unsuccessful nevertheless leads to problematisation and formulating theoretical and methods questions which need to be solved on further stages of acquisition of module’s content.

At the second stage of mastering the module (while solving the posed pedagogical problems), students cope with the theoretical content presented by a complex of different sections or academic disciplines, but interconnected by the common basis of a professional action or actions requiring knowledge of this content. At the same time, it is important that the study of the theoretical part of the module organised in this way should be involve the maximum active independent work of the students themselves (including in group formats). In this way, the theoretical content of the module is studied as a search for answers to the questions posed at the first stage of studying the module (stage of introductory training) in the form of searching for solutions to specific pedagogical problems and tasks formulated

following its completion, thus creating conditions for a meaningful attitude on the part of the students towards the studied theoretical material. In our opinion, such an approach allows one of the main drawbacks of most existing teacher training programmes — the lack of connection between the studied theoretical material and the content of future professional activity — to be overcome.

At the third stage of the study, the module involves drilling the necessary techniques, methods and tools — that is, employing specific approaches to implementing the mastered professional actions in a special teaching environment (practicum, laboratory). This stage is aimed, in essence, at the initial modelling of a professional action, i.e., at its study and assimilation in a model or possible situation (in this sense, simplified in comparison with the real one).

Finally, at the next (fourth) stage of the module study, the mastered professional actions are tested in the real school settings, which acts as a necessary and obligatory component of the module (“clinical practical base” of the module) with special supervision by an experienced school mentor. The purpose of this stage (training) is to analyse the mastery of professional actions by students in a real educational environment, control the correctness of its implementation and assess its development.

The differences between the implementation of the mastered professional actions in a model situation of practicum [46] and under real conditions (in a clinical setting) (in particular, the failure or ineffectiveness of such actions in the settings of a real educational organisation and real students) constitute the main content of the fifth stage of the studied module, which comprises psychological and pedagogical action research aimed at analysing the causes and difficulties in the implementation of mastered professional actions and consequent formation of research competences in future teachers (alongside with paradigm of a practitioner-researcher).

This type of psychological and pedagogical research, which is aimed not so much at obtaining new scientific data (academic research) as solving a specific pedagogical problem in the classroom, as well as developing professional actions based on the scientific method and formed research competences, becomes a new type of scientific research (action research) [47; 48] carried out by students within the framework of teacher training programmes. As such, it comprises an important mechanism for combining theory and practice within a single integrated unit of the educational programme (Table 1). Finally, the reflexive section, which completes this module stage, is generally aimed at overcoming the possible risk of “paraprofessionalism” and “natural type” of teacher actions acquisition as the only way of their performing which was introduced to them in the particular clinical setting.

Discussion about the conditions and methods of their professional actions with other students and their supervisor allows the students not only to “appropriate” those actions, but to understand them in the space of possible conditions of their further implementation — that is, to perform theoretical, professional and ideological generalisations.

The construction and discussion of various possible situations in the classroom related to modelling and the possible transformation of mastered professional actions in response to changed conditions for their implementation creates prerequisites for implementing the concept of a reflective teacher (D. Shon) [31] and ensuring the key competence of professional education, — the ability to transform and develop mastered professional actions.

In this way, the main directions of modernisation of teacher training programmes within the framework of improving their structure are associated with the transition to the modular principle of programme development (with the inclusion of edu-

cational and introductory training, as well as research work in each module), which assumes that the contents and goals of each module are aimed at mastering the appropriate professional actions (labour functions) interconnected with the Professional Standards for Teachers.

The implementation of this approach involves a significant revision of the role played by the practical setting and experienced mentors, who are carriers of unique and poorly formalised components of pedagogical knowledge (tacit knowledge) in the formation of professional competences mastered by students. Thus, the school becomes an equal partner of the university in the design and implementation of an educational programme for future teachers, being transformed from the usual setting for illustrating a theory into a source of independent and important knowledge and samples

of mastered professional actions — that is, into a “clinical setting” (such a methodical approach to training teachers resembles the clinical method in the medical training). Such a model of interactivity between the university and the school (school-university partnership) [46; 53] is characterised by a significant increase in the volume of practice (up to 60—80 single credits) (in bachelor’s programmes), of which 30—40 single credits are included in the form of thematic problem-oriented practices specified by the content of modules-blocks of distributed practice (years 1—3 of bachelor’s programmes) necessary for the complete mastery of professional actions, while at least 30 single credits are assigned for long-term complex practice (internship) in the 4th year of bachelor’s programmes aimed at mastering a holistic professional activity in accordance with the objectives of the programme

TABLE 1

Structure of the training module and stages of its study

Stage no.	Stage name	Learning content
Stage 1	Professional probe	Demonstration of sample professional actions, united by one or more labour functions. Professional probes. Attempts to independently fulfil professional tasks. Formation of a list of pedagogical problems and tasks.
Stage 2	Theoretical Practicum	Studying the theoretical material of the module as an approach for solving pedagogical problems and tasks. Formation of approaches for performing professional actions (instrumental aspect). Development of specific approaches to professional actions in the educational and laboratory environment (practicum).
Stage 3	Practical training	Performing professional actions in a clinical setting (real educational organisation) under supervision.
Stage 4	Students’ action research	Analysis of the effectiveness and difficulties in performing professional actions. Organisation of mini-studies aimed at analysing the causes of inefficiency and difficulties in professional activity; construction of a new professional action.
Stage 5	Reflection	Organisation of reflection (group, individual) of their actions, taking into account the results of research work. Formation of a generalised approach to professional actions (understanding the implementation of professional actions in the space of possible changes in conditions of their realisation).

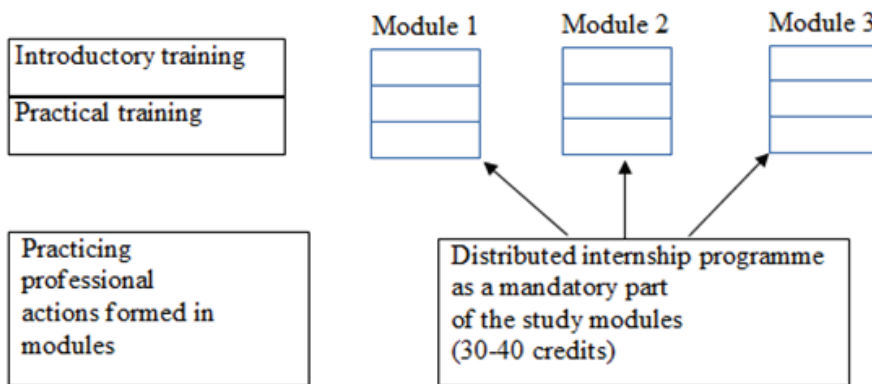
at one of the clinical settings organised on the principles of supervised school-university partnership (Fig. 1).

It is not possible to implement requirements aimed at intensifying practical training associated with the development of standard professional actions/techniques (stage 3) and the formation of a broad capability to build effective professional actions under conditions of uncertainty and the emergence of new conditions for their implementation without changing the role, location and content of the research training of future teachers (stages 4, 5).

The described intensification of the research training of a future teacher is closely related to the attempt to implement paradigms of “*practitioner researcher*” [27] and “*reflective practitioner*” approaches [30; 31].

The problems arising in the implementation of the professional actions of a future teacher lead to the need for his/her built-in scientific action research as a necessary stage and mechanism for research-based way of restructuring of professional teacher actions. In this way, a reflective practitioner capable of self-development, the development of professional actions in response to problems and changing conditions of their implementation, turns out, first of all, to be a practitioner-researcher [47], carrying out such a restructuring based not on trial and error, but according to the scientific method, including the ability to conduct a scientific analysis of the collected data, formulate a hypothesis about the cause of difficulties and develop a new, more perfect professional action.

Year 1 in Master's programme (years 1-3 in Bachelor's programme)



Year 2 in Master's programme (year 4 in Bachelor's programme)

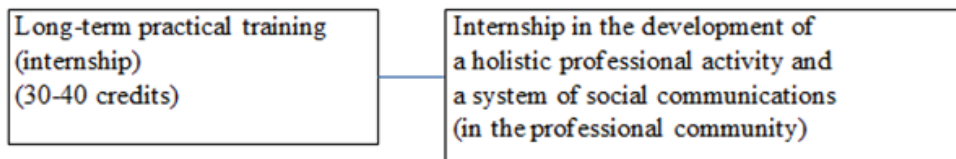


Fig. 1. Practices including distributed practice in modules and long-term internship

TABLE 2

Division of responsibilities in the context of the network interactivity “school-university”

Stage no.	Setting	Contents
Stage 1	School	Supervisor: demonstration of a sample of professional actions. University coordinator: formation of a list of pedagogical problems.
Stage 2	University	University Coordinator: integrating theoretical materials as a means of solving pedagogical problems; mastering a set of tools (methods) to carry out professional actions
Stage 3	School	Supervisor: formation of professional actions (from showing a sample through joint implementation to quasi-independent activity)
Stage 4	School	University coordinator: organisation of students’ scientific action research
Stage 5	University	University Coordinator: formation of a generalised model of professional action

**Communication 2. Results
of the Project for the Modernisation
of Teacher Education (2014—2017)
and Recommendations
for the Development of Teacher
Education in Russia**

***Project for the Modernisation
of Teacher Education (2014—2017) —
Assessing the activity approach***

The new model of teacher education was tested within the framework of a comprehensive project (2014—2017) involving the participation of 65 universities of all types (from pedagogical to research) that train teaching staff [16]. The total number of students enrolled in the teacher education programmes accounts for 59% of the total number of students in this direction in all universities of Russia.

The geography of the project was represented by 51 out of the total 85 Subjects of the Russian Federation.

The evaluation technology required the widespread use of network interactivity of participants, both at the level of 13 universities responsible for the development of programmes

for a particular profile of teachers, as well as at other universities involved in such development and testing of modernised programmes, and between universities and schools within the framework of the developed model of school-university partnership and joint implementation of professionally oriented modules.

The total number of students who took part in the project within the framework of training carried out in 45 modernised programmes was approximately 12,000.

Scientific-methodological and coordination-analytical support for the project was carried out by the Moscow State University of Psychology and Education (MSUPE) in cooperation with the Institute of Education of the National Research University Higher School of Economics.

The structure of the modernised basic professional educational programmes for bachelor’s and master’s degrees tested in the course of the project is shown in the diagrams below (Fig. 2, 3). A particular feature of the developed programmes was the correspondence of professionally oriented modules (designated by the letter M) to the tasks of forming their capability of performing a particular pri-

mary labour function within the professional standards. Accounting for the various levels and directions of the preparation of graduate

students (received by them in bachelor's programmes) was carried out through the introduction of adaptation modules.

Structural and logical scheme of the model of applied bachelor's programmes

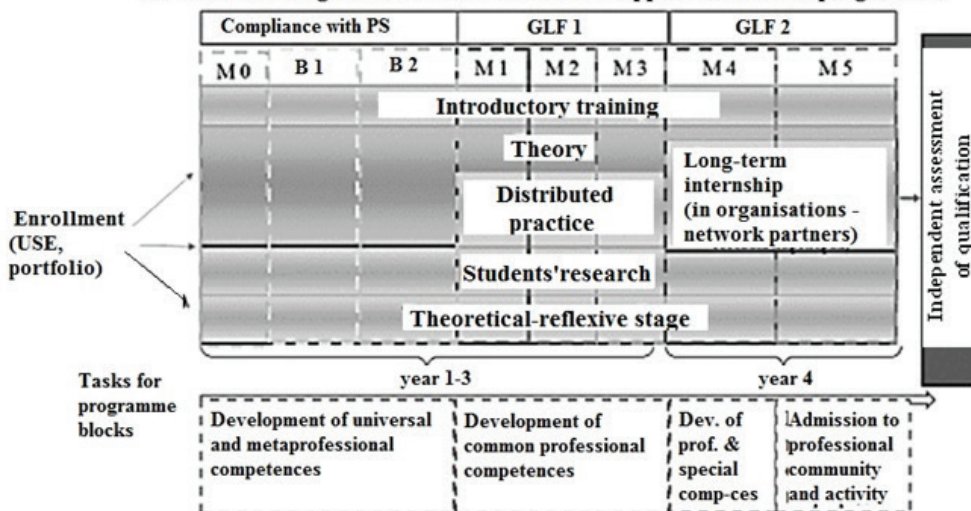


Fig. 2. Structural and logical scheme of the model of applied bachelor's programmes

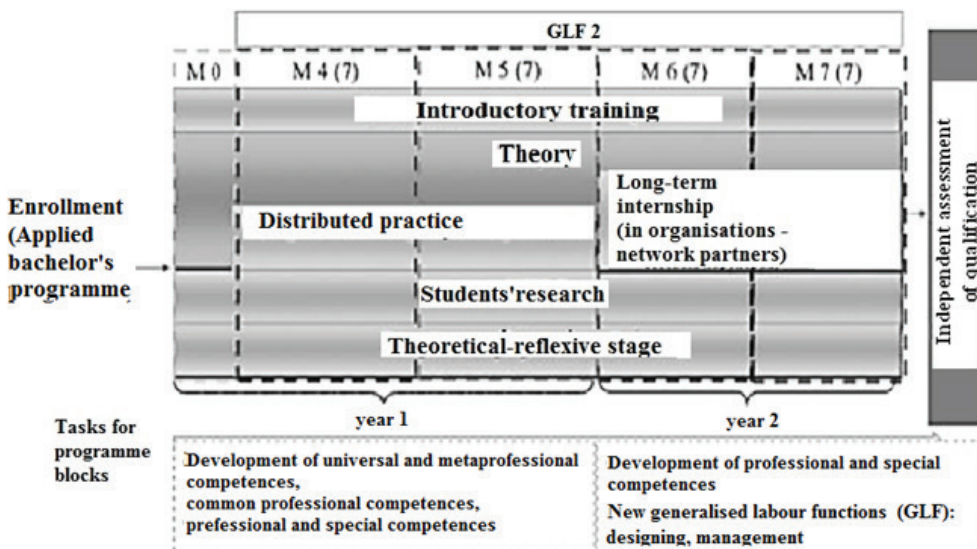


Fig. 3. Structural and logical scheme of the model of a pedagogical master's programme for graduates of a pedagogical bachelor's degree

In the process of project implementation, an independent assessment of the effectiveness of the developed programmes was carried out twice on the basis of development diagnostics of professional competences among students who studied modernised programmes as compared with students of the same universities who studied in traditional training programmes. The assessment involved 6300 students from 51 regions of the Russian Federation (13).

Below is an example of assessing the development of the methodological competence of a future teacher based on the solution of a subject case.

SUBJECT CASE

The subject case was aimed at testing the ability to evaluate the work of students on a specific academic subject and knowledge of the reasons for typical mistakes made by students.

General structure of the case

The case contained a task in the academic subject from the 2017 Unified State Exam.

The case contained the student's answer and the "score" given by the imagined teacher for the answer.

It was necessary to evaluate the correctness of the mark.

In case of disagreement with the teacher's assessment, it was necessary to indicate the most probable reasons for the typical mistakes made in the student's decision.

Example of a case study in biology

Instruction

Read the problem that was suggested to the students. Look through the student's way of solving the problem.

The problem

Read the statements. Choose three statements that indicate the driving forces behind evolution. Write down the numbers under which they are indicated.

1. The synthetic theory of evolution claims that species live in populations in which evolutionary processes start to take place.

2. It is precisely in populations that the most acute struggle for existence is observed.

3. As a result of mutational variability, new traits gradually appear, including adaptation to environmental conditions — idioadaptation.

4. This process of the gradual appearance and maintenance of new traits under the influence of natural selection, leading to the formation of new species, is called divergence.

5. The formation of new large taxa occurs through aromorphoses and degeneration, which also leads to the biological progress of organisms.

6. Thus, the population is the initial unit in which the main evolutionary processes take place — a change in the gene pool, the formation of new features, the emergence of adaptations.

*The problem was solved
in the following way.*

2. It is precisely in populations that the most acute struggle for existence is observed.

4. This process of the gradual appearance and maintenance of new traits under the influence of natural selection, leading to the formation of new species, is called divergence.

The formation of new large taxa occurs through aromorphoses and degeneration, which also leads to the biological progress of organisms.

Student's answer: 2, 4, 5.

Task.

1. The teacher gave an excellent grade (5 on a five-point scale). Assess the correctness of the teacher's grade by choosing "Agree" or "Disagree."

2. If you disagree, put your mark (on a five-point scale).

3. Analyse the way the student solves the task and select the most likely reasons for

the typical mistakes made in the student's solution (from the list):

1) the concept of "driving factors behind evolution" has not been formed;

2) ignorance of the essence of the main biological phenomena and processes: the influence of elementary factors of evolution on the gene pool of the population; the ability to explain the role of biological theories, laws, principles and hypotheses in the formation of a modern natural-scientific picture of the world has not been developed;

3) the ability to compare and draw conclusions based on the comparison of the most important biological processes and phenomena has not been formed;

4) the ability to identify the characteristic features of biological processes has not been formed;

5) ignorance of the essence of modern biological theories and hypotheses.

Correct answer number: 1, 2, 6.

1. The subject case was assessed according to two criteria

2. Knowledge of the subject and ability to evaluate the work of students. If the student did not agree with the teacher's assessment (which was deliberately set incorrectly in the case), he or she therefore correctly solved this problem himself, showed knowledge of the subject and received 2 points. In the case of agreement with the assessment, the teacher received zero points, since a mistake was deliberately made in the student's answer.

Knowledge of the causes of typical mistakes that students make. This criterion was assessed for those who correctly completed the first part of the case. For each correctly indicated cause of errors, the student received additional points.

The subject case was carried out by 347 students of bachelor's programmes. The experimental group consisted of 274 students; the control group — of 73.

Results of subject cases solving

The first part of the case was carried out by 347 students. Of these, 279 participants (74.5%) demonstrated knowledge of the subject and the ability to evaluate the work of students.

Comparison of the level of subject knowledge students and the ability to assess knowledge of students in the control and experimental groups was carried out using the nonparametric Mann-Whitney test.

The diagram (Fig. 4) shows that the knowledge of the subject and the ability to evaluate the work of students in the control group was lower than in the experimental group. Moreover, the differences were found at the level of statistical significance ($p = 0.000$).

The second part of the case was carried out by 279 students. Of these, 47 participants (16.6%) demonstrated knowledge of the causes of typical mistakes made by schoolchildren. Out of a total of 47 participants, 4 were from the control group and 43 were from the experimental group. Thus, no valid comparison can be made between the control and experimental groups.

Following the completion of the project and according to its results, a new FSES (3++) was developed for training teachers in all major areas (Professional Education, Professional Pedagogical Education, Secondary Professional Education) and levels of education (bachelor's, master's, postgraduate studies) and packages of sample basic professional educational programmes for all major pedagogical profiles and specialities.

Project results

The above-described Project for the Modernisation of Teacher Education (2014—2017) actually contained two different, albeit interrelated, reforms.

Firstly, this pertained to the professionalisation of teacher education programmes, i.e., bringing them into compliance with the

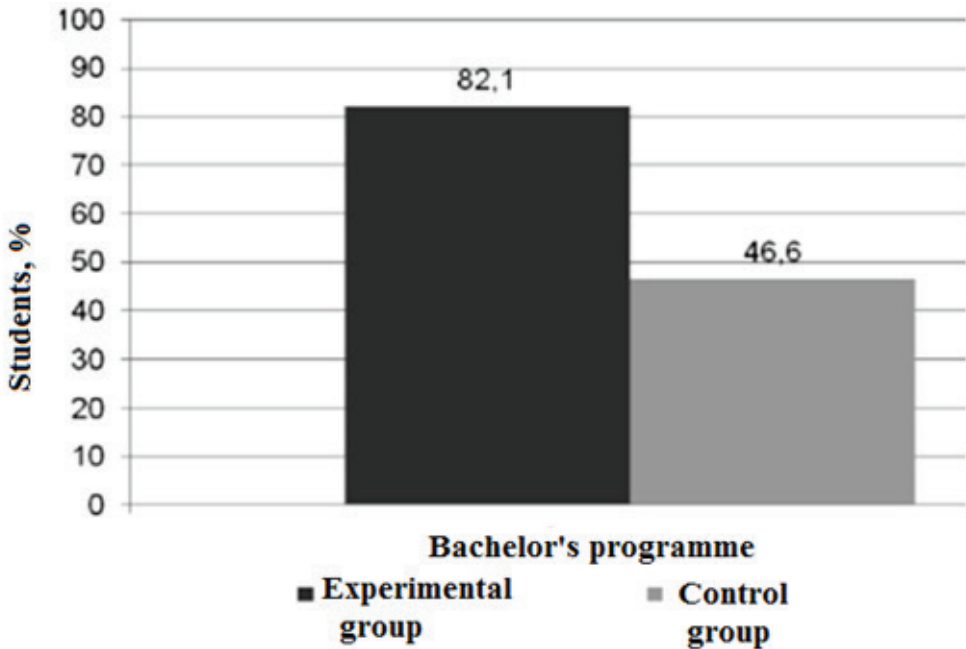


Fig. 4. Diagram of the results of students at the bachelor's level in the subject case within the framework of the general professional competence assessment (GPC-4)

professional standard for teachers as well as with FSES (standard-driven reform) [36; 38; 45]. The purpose of this stage of the reformation was to bring the results of mastering teacher education programmes (competences of graduates) into compliance with those professional actions that are necessary for achieving the desired educational outcomes of students (FSES for General Education).

In principle, following the foundations of the project described in the first part of this paper, the reformation of teacher education could be completed at this point, with the technology for teaching in new pedagogical programmes having any character that was consistent with the direction towards the formation of new educational results of graduates.

However, the reform was not only aimed at changes in educational results, but also

at modifications in the method of their formation — that is, affecting the very model of organising educational activity of students undergoing the teacher education programmes. This second stage (actually parallel to the first) of modernisation can actually be called activity-based, since it was precisely this stage that was characterised by the transition from mastering knowledge for future activity to mastering the activity itself and apprehending the knowledge necessary for this in the form of tools of professional activity.

The particular technology for the implementation of the activity approach (which is considered by us as the development of the content of the activity itself in the course of the teacher education programme) is the modular approach, whose units comprise professionally oriented educational modules.

Assimilation of this module enables a student to form a generalised approach towards the professional actions of a future teacher, which is aimed at solving typical professional tasks.

The structure of the module, including its practical part, is related to the recognition that, along with the theoretical part, knowledge also embraces the “practical” (tacit) aspect. Actually, the generalisation of professional knowledge occurs directly in the process of mastering the activity (“melting” its various components into a kind of “alloy”, where the case comprises one of the forms of its fixation (L. Shulman)) as practical-theoretical knowledge in the context of professional action (unit of mediated professional action). Notably, the spontaneous process of generalisation of knowledge as a set of activity tools usually occurs already at the stage of independent activity of a newcomer teacher as part of the process of transforming the previously mastered knowledge. In contrast, within the activity approach to designing new educational programmes, knowledge is initially apprehended as components of activity tools in preparation for that activity. Its generalisation and contextualisation take place within the educational practice that is built into each professionally oriented module. This makes it possible to move from the process of spontaneous generalisation of knowledge in independent activity to a controlled process of its generalisation and reflection in the course of preparation for such activity within the framework of teacher education programmes.

Therefore, the generalised nature of the mastered action is assumed to have several levels:

— various components of theoretical knowledge (domain-specific, methodological, psychological) combine in the situation of planning a professional action;

— theoretical knowledge combines with practical knowledge in the situation of mas-

tering a professional action in the course of educational practice, which is built both into the module itself and the structure of an internship that completes the training;

— generalisation of the obtained “alloy” by combining it with the context and conditions for implementation of the action, i.e., its fixation in the form of a case;

— modelling and changing the mastered action following changes in the conditions for its implementation (generalised case or generalised model of action).

On this basis, a future teacher can acquire the capability for independent professional development that consists in the competence to independently restructure the mastered professional actions in accordance with the changed conditions of their implementation on the ground of the developed research competence and professional transformation.

Thus, the major result of the Project for the Modernisation of Teacher Education is the development of the new standards for teacher training (FSES for Higher Education 3++, Integrated Group of Training Areas (UGSN) “Education and Pedagogical Sciences”) [18; 19], in which the educational results of graduates are brought in compliance with the requirements of the teaching standards and the FSES for General Education, as well as new methodology for designing educational programmes that ensure the formation of these new results on the basis of the activity approach in psychology.

In comparison with other projects in the field of modernisation of professional education this particular project is unique, because the process of developing new FSES, new methodology for educational programmes and basic programmes in all profiles of teacher education and their approbation with more than 12,000 students from 65 universities and 51 regions of the Russian Federation were implemented in parallel and simultaneously for the period from 2014 to 2017.

Unresolved Issues

According to our reckoning, the key unresolved issue associated with the results of the project is the lack of a professional exam for graduates of teacher education programmes. Despite the development of the content of such an exam in the form not only of theoretical knowledge but also professional competence assessment [13] and the double testing of the procedure itself, such an exam has not become the final stage of teacher training, neither in 2017 or up to the present day.

We can only speculate about the reasons for the reluctance on the part of education authorities to make such an appropriate decision or to recognise the negative consequences that arise from the absence of an institutionalised system for assessing the professional competence of future teachers.

The most important consequences of this situation include the following:

1. The professional exam as a procedure for the awarding of qualifications.

In essence, the lack of an independent assessment of the professional competencies of graduates of teacher education programs consolidates the status of such programs as, in the first place, educational, and not professional. Since, for professional education programmes, it is absolutely crucial to verify the achievement of the required level of qualification as a cumulative competence of a specialist, the very absence of a Teacher qualification of the graduates (instead of which they are awarded a qualification in Pedagogical Education, Professional Pedagogical Education or Secondary Professional Education) is fully consistent, if obscurely understood, with the absence of a mandatory professional exam.

Moreover, the absence of a professional exam, developed according to the requirements of Professional Standards for Teachers and institutionalised either in the form of a new model of State Final Examination,

or in the certification of graduates outside the training programme (prior to applying for a job in educational organisations), to a certain extent devalues all attempts made during the implementation of the modernisation project to professionalise the teacher education system.

Among other things, the absence of such a professional exam on which basis the Teacher qualification could be awarded gives rise to additional substantive and legal conflicts associated with the fact that teachers who do not have a professional Teacher qualification enter the education system with a Bachelor qualification, within which certification procedure, teachers with the qualifications like Teacher of the First Category or Teacher of the Highest Category start to appear in the system after a certain time. Thus, for as long as these young specialists cannot be them, the question of where and when the actual qualified teachers appear in the education system remains an open question.

Supposedly, the introduction of the professional examination for graduates of teacher education programmes has been postponed until the introduction of the National System for Teacher Development (which was later renamed to the National System for the Professional Development of Teachers). However, in the opinion of a number of stakeholders, the numerous discussions and difficulties associated with the emergence of this system indicate that the introduction of a professional exam for graduates (in order to change the certification procedure) can hardly be synchronised with the creation of such a complex and ambiguous system.

2. The professional exam as a condition for diversification of training trajectories

An additional significant negative consequence of the absence of a professional exam for graduates/ future teachers is the fact that it is virtually impossible to pursue another important goal of the Project for the Modernisation of Teacher Education, which

consisted in the possibility of broad diversification of various trajectories of teacher training. The necessity of this point in the strategic documents of the Government of the Russian Federation, in which the main goals and directions of the project were established [9; 20], was associated with an attempt to involve graduates or experienced specialists who do not have teacher education, but are motivated to work with students in the general education system, along with future teachers trained in the framework of modernised programmes. While initially engineers were considered as such specialists, the list of such professions can be much broader, ranging from humanities to science and technology professionals.

The second target audience for the teaching profession comprises not ready-made specialists with non-pedagogical education, but rather people who are still receiving such training as students of non-pedagogical programmes and who have then have changed their professional plans in the direction of teaching profession.

Numerous studies [26] show that professional/ career guidance choices made at the age of 17-18 rarely turn out to be successful, but that the majority of young people become fully aware of their professional interests much later — typically, during the process of studying at the university. For this reason, it would be rational to provide a range of opportunities for those students of non-pedagogical programmes, who, belatedly realising their interest in teaching, could change their training trajectory without losing significant time (as currently tends to be the case).

In our view, the diversification of various trajectories of teacher training can only be achieved with the introduction of a professional exam based on the requirements of the Professional Standards for Teachers: this outcome is secured regardless of the educational trajectory and model future due to the readiness of students for professional

activity being ensured by the same requirements introduced by the state and the professional community for such activity.

In all other cases, specialists with a non-pedagogical education trying to enter the system are faced by a barrier of fabricated requirements for teachers, or disproportionate additional bureaucratic procedures associated with “paper” comparisons of candidates having the necessary qualification requirements but without involving a real assessment of their current professional competences.

3. The professional exam as the basis for postgraduate education programmes and support of young specialists

The absence of a professional exam for graduates of teacher education programmes misses the opportunity to obtain an idea of the competences of a future teacher; this, in turn, leads to two significant negative consequences. Firstly, due to the lack of independent assessment of the graduate’s qualifications, the future employer (head of an educational organisation) has to focus mainly on the formal aspects of the education a candidate has received (higher education diploma, list of courses taken and academic performance). As noted earlier, this does not provide the employer with insights about the professional tasks a young specialist can successfully solve independently — and where, conversely, he or she will require additional supervision.

Secondly, an independent exam could reveal the deficiencies of professional competences, and without it, a young specialist, who embarks on an independent professional activity, risks to fail seriously, in fact, without a clear understanding and reflection about both personal strengths and “under-mastered” capabilities.

Taking all the aforesaid into consideration, the lack of a professional exam for graduates of teacher education programmes (either in the form of a different model and content of the State Final Examination or in

the form of certification and qualification assessment after graduation but as a condition for employment in an educational organisation) results in the absence of a list of key professional deficiencies that could be used as the basis for individual postgraduate education programmes and support of young teachers, both from the educational organisation in which they started independent activity, as well as from the university where the training took place.

4. The professional exam as a basis for changing approaches to accreditation and quality assessment of programmes

Another important consequence of the lack of institutionalisation of an independent professional exam for graduates consists in a set of questions about the quality of their teacher education.

Questions of the quality of professional — and, in particular, teacher — education are most notably connected with the rating not of the programmes themselves, but rather of the universities, as well as within the procedure for state accreditation of basic professional educational programmes carried out periodically by the Federal Service for Supervision in Education and Science (Rosobrnadzor).

From our perspective, most of the ratings used today in the Russian Federation (from assessing the quality of enrolment to evaluating the demand for universities) more or less effectively help to assess the parameters of universities' activity in general rather than a specific programme and its quality in comparison with similar programmes. A major drawback of the state accreditation procedure, which focuses not on the educational programme but rather on the university as a whole, is that it is aimed not at assessing student learning outcomes, but at analysing the conditions of their education and comparing them with the state requirements as specified by the FSSES for Higher Education. Thus the theoretical assessment of learning outcomes or academic performance within

the State Final Exam cannot be considered as an independent assessment of the professional competences of graduates from the point of view of standard requirements (professional standards).

In practice, this leads to the preservation of an unmanageable bureaucratic procedure, which poorly clarifies the real level of graduates' preparation for independent professional activity, but serves instead to distract universities by requiring them to collect a huge number of documents for accredited programmes.

Moreover, the lack of an independent professional exam for graduates deprives them of the opportunity to assess the quality of training programmes, as well as disorienting new applicants, who can be guided by many different types of information about the university or a specific programme, with the exception of the most important type of such information: how efficiently this programme prepares its graduates for independent professional activity.

The institutionalisation of independent assessment of graduates' professional competence, on the other hand, will fundamentally revise current approaches to assessing the quality of programmes, potentially moving towards a different model of their accreditation, as well as providing future applicants with much more reliable information about this important factor.

In addition, an independent assessment of the quality of training graduates for professional activity could contribute to the transition to a more objective model of distribution of admission quotas between certain programmes. The existing technology for calculating the admission quotas is grounded on the recording and analysis of many different factors, except the quality of training of graduates on the basis of an independent and reliable assessment.

5. The professional exam as a feedback mechanism for the university and motivation for improving the quality of student training.

Finally, it should be noted that the introduction of a professional exam is one of the most effective means of improving the quality of teacher education programmes. The poor results of an independent assessment of graduates' qualifications simultaneously affect their image among employers (and consequent success in the job market) and their image among applicants — that is, the opportunity and quality of enrolment. Thus, negative perceptions of professional exam results by both employers and applicants can act as a much more effective incentive to improve the quality of teacher education programmes for universities than any form of administrative control.

Conversely, a high pass rate of a professional exam on the part of graduates of the programme indicates that it has provided a high quality of training of future teachers, which in our view should lead to a transfer of these programmes to a category offering a higher degree of academic freedom and creativity in the training of specialists.

Recommendations for the further development of teacher education

1. The protracted pause (2018—2020) that followed the completion of the Project for the Modernisation of Teacher Education (2014—2017) appeared partly due to the division of the Ministry of Education of the Russian Federation into the Ministry of Education and the Ministry of Science and Higher Education, which deferred the extension of the project to the entire teacher training system. Despite the significant scale of the project, which involved 65 universities of almost all types (pedagogical, traditional, research and federal), in which more than half of the future teachers in the entire country are trained, a significant number (180) of other universities that implement teacher education programmes did not participate in the project in any way and were for the most part unfamiliar with its results.

Moreover, the new standards for teacher education developed as a result of the project (FSES for Higher Education 3++, Integrated Group of Training Areas Education and Pedagogical Sciences) [18; 19], to which standards all universities of the Russian Federation started training future teachers from 2020, currently lack any system of scientific and methodological support (first of all, in terms of advanced training of faculty). This is despite significant (if not radical) changes in the methods of organising educational activity of students, revision of relations with organisations of general education, the roles and positions of the university and the school, as well as indicators of practical readiness and theoretical knowledge. Without any quality assessment data on the transition to the new FSES, it can be safely assumed that the result of this transition will be, to put it mildly, rather different from what its designers had in mind.

In this regard, the first and most obvious proposal for the development of teacher education in the Russian Federation, established according to the principle of continuity with the previously implemented Project for the Modernisation of Teacher Education, is to quickly create a system of scientific and methodological support for the transition of universities to the new standards of pedagogical education developed through the project — and, above all, the elaboration of professional development programmes for teaching faculties of universities involved in the implementation of new programmes. Such a system can be created both “from above” — as ordered by the concerned ministries — and “from below” — on the initiative of universities that actively participated in the project, which are represented, among other things, as part of the Federal Academic Methodological Association (FUMO) in the field of Education and Pedagogical Sciences. The lack of a support system in the transition to new teacher education standards forces universities to deal with a complex

organisational and methodological problem while lacking the means and resources to address it effectively. Such a situation can result in a formal transition to new the FSES while retaining all the major characteristics of the traditional approach to teacher training.

2. The new standards of teacher education developed over the course of the modernisation project, as well as the professional competences of graduates documented in it, meet the requirements of the professional standards for teachers and the FSES for General Education. The activity approach implemented in these standards is primarily associated with the modular principle of developing educational programmes in which a professionally oriented module becomes an educational unit that simulates a typical professional task. Assimilating the content of the module simultaneously assumes the mastering of professional actions and best teaching practices, as well as developing the necessary theoretical knowledge aimed at tackling a particular typical professional task.

However, neither the FSES nor the draft programmes developed on its basis adequately clarify the real nature of these best teaching practices.

In our opinion, the standards contain only the framework of a new model for organising the educational activity of future teachers, but they do not and cannot contain comprehensive content with which such a framework can/should be saturated.

Thus, in our view, the second most important problem concerning the development of teacher education consists in the selection of the activity-based content with which professionally oriented modules should be filled. Determining the best practices for typical professional tasks, presented in terms of selecting the activity-based content of professionally oriented modules, inevitably raises the question of how to select and assess professional practices. The only known methodology for such selection developed

on the basis of independent scientific studies is the evidence-based approach.

In this way, the task of saturating professionally oriented modules with the specific content of the best teaching practices mastered in them is actually transformed into the task of selecting such practices based on the evidence-based approach and conducting appropriate empirical studies using a single protocol and methodology. Studies carried out by J. Hattie [34; 35], P. Grossman, M. McDonald, K. Hammerness [33] and a number of other researchers [29; 30; 40; 45] have already identified a number of teaching practices that have a huge impact on the educational results of students. However, due to significant contrasts between education systems operating under the various socio-cultural conditions of different countries, the effective practices identified in these works should be treated as promising "candidate" practices that may yet prove optimal under the realities of our education system. At the same time, it is obviously necessary to independently create a domestic system for selecting the best teaching practices that fully correspond to the specific realities of the Russian education system and are developed on the basis of independent scientific research aimed at assessing their effectiveness.

3. The third suggestion for the further development of teacher education is related to the modernisation of the methodological training of teachers.

In contrast with the suggestions offered by experts to associate the development of the general education system with a search for its new content, how to teach (methodology) seems to be more significant than what to teach (didactics) [38; 41]. Assuming the framework for the implementation of the major educational goals documented in the FSES for General Education [9], one of the main goals is the formation of the ability to study independently. Achieving this goal in practice implies the formation of universal

learning actions in students, the mastery of which (whether they are called learning actions within the psychological theory of learning activity (D. B. Elkonin, V. V. Davydov) [6; 7], soft skills or 4C (competence of the 21st century: critical thinking, creativity, cooperation, communication) is declared as one of the major goals of education, both nationally and internationally.

Unfortunately, it must be admitted that no clear and effective methodology for developing a set of Universal Learning actions in the subject area has yet emerged. This is despite more than 10 years having passed since the goal of its development in Russian education was introduced in 2010. In fact, this led to a complete profanation of the formation of such actions in the course of mastering academic subjects and a “washing out” of the idea of development associated with them from the real practice of Russian education. At best, meta-disciplinary learning outcomes are referred to as inter-subject/integrated learning. In some cases, attempts are made to develop isolated universal learning actions or associated personality traits (e.g. social or emotional intelligence programmes). In most other cases, however, universal learning actions are mentioned during demo lessons and presentations, since the practice of external control, which is based on the total primacy of the assessment of subject learning outcomes, often fails to reach the level of formation of learning actions. Moreover, the general teaching community finds it possible to shape students’ subject learning outcomes to the level of scientific concepts (rather than memorised definitions or stereotyped solutions to a limited range of school tasks) without any kind of Universal Learning Actions. The latter continue to be regarded to a certain extent as “new-fangled” and redundant subjects for their activity, which, as before, should be directed entirely towards the formation of “solid” knowledge.

Teachers who have not received pedagogical education — and, as a consequence,

have not formed a different view of the role of mental actions and the development of thinking in the learning process — should not be blamed for this attitude, which emphatically does not coincide with the conclusion of numerous psychological and pedagogical studies that demonstrate the impossibility of forming precisely subject learning outcomes (at the level of concepts) without formation and simultaneous development of learning activity and thinking of a student (i.e., the formation of Universal Learning Actions) [6; 7; 8]. This conclusion is confirmed every time that students find themselves in a situation of solving tasks that are not marked by belonging to a certain class, but are instead required to solve a more or less reality-based problem (especially with excessive degrees of uncertainty). This is very clearly manifested in the process of participation in international monitoring studies of the quality of education.

However, in most cases appearing in stark contradistinction to the real reasons for the difficulties experienced by students in this case, the conclusions from the analysis of failures in solving such tasks do not provoke any changes in the methodology of teaching school subjects.

Incidentally, a similar conclusion is reached in national studies of the quality of education (including under the programme of the National Study of Education Quality by the Federal Institute for Evaluation of Education Quality (FIEEQ)) and assessments of teachers’ professional competences, which were carried out by a number of higher education institutions (Herzen University, Moscow State Psychological and Pedagogical University, Novosibirsk State Pedagogical University) at the request of Rosobrnadzor and the Ministry of Education [1; 2; 11].

These studies show that, regardless of their level of subject training, a significant number of teachers (from senior students to teachers of the first and the highest category) experience serious difficulties in determining

the causes of student errors, which underlie misconceptions and the most effective strategies for overcoming them and further developing.

In other words, a significant number of future and working teachers lack the methodological competency considered to be not only knowledge of their subject curriculum and topic sequences, but also components of this competency, such as developmental assessment, identification and development of student perceptions, effective organisation of participatory learning activities in which the model of these activities is constructed to ensure student development in the formation of subject concepts.

Meanwhile, it is precisely these components of a teacher's methodological competency (which intersect with psychological and subject-specific competences) that are crucial for achieving the major goal of subject-based learning, i.e., shaping scientific concepts in students. The main reasons for this lie in the simple fact that students at the initial stage of learning a particular subject are not a "tabula rasa" into which the teacher inculcates scientific concepts. On the contrary, numerous studies (S. Vosniadou et al.) [49; 50] show that first-grade pupils (and in fact most pre-schoolers) have a range of spontaneous conceptions (so-called "life concepts" according to Vygotsky) [3; 4] for almost all subjects comprising the learning materials taught at school. Being the result of the generalisation of a child's direct sensory experience and related in many cases to the ontological categories of his/her world view (28), such concepts often involve an significant capacity to resist any change, including education, especially if when constructed in a highly non-individual and predominantly verbal way. Being undetected by the teacher in sufficient time, the initial ideas of students are perfectly masked, assimilating a part of the memorised learning information without fundamentally changing the method of generalisation. For this reason, the learning process often leads not to the development

of scientific concepts, but rather to synthetic representations [49]. In a situation of standard school tasks, such representations can even create the impression that the student obtains a scientific concept (can give a correct and socially approved definition and ostensibly solve a standard problem by means of a stereotyped set of memorised actions), but in a contradictory situation or in a more complex context, it becomes evident that no knowledge has been applied because, generally speaking, there is nothing to apply.

In our view, all the above mentioned means that the central methodological task of a teacher consists in identifying such initial representations of students (including on the basis of an analysis of their mistakes) and constructing individualised teaching as a process of transformation of initial representations towards scientific concepts (conceptual change) [49]. This psychological and methodological task can be related to the creation of a zone of proximal development [3] at the micro level of the organisation of learning activity. Obviously, a teacher must be sufficiently prepared for performing this most complex and at the same time most creative professional task. At the very least, teachers should be aware of the students' initial representations and their specifics in a particular educational topic, learning to recognise such representations behind the student's mistakes and, instead of marking them positively or negatively, understand their causes and build a special working activity to overcome the causes of such mistakes (formative assessment).

However, our 2020-study of teaching programmes of the "classical" academic discipline Methods of Teaching a Subject, presented in the material of the Methods of Teaching Mathematics in Elementary School courses in various universities showed that, out of 63 programmes of teaching this discipline, only three of them contained some descriptions of students' representations about the concepts being studied, their typical mis-

takes and methods of avoiding them. A similar result was obtained when studying the teaching materials for primary school teachers (regardless of the specific programme for which this or that teaching method was developed).

Thus, it can be stated that the current system of methodological training of future teachers within the framework of teacher education programmes, as well as the methodological support provided to working teachers, in no way ensures the ability and opportunity to develop students in the process of their subject learning. In reality, this implies the impossibility of forming Universal Learning Actions in these students and the subsequent inability to study independently (including throughout life, i.e., outside school). Moreover, it entails the impossibility of forming subject results at the level of scientific concepts, which is considered to be the main real content of the work of most teachers.

From all of the above we can conclude that one of the most important tasks of the next stage of modernisation of teacher education (including further education system) requires the modernisation of the methodological training of a teacher, which should provide an opportunity for the development of initial representations of students and their transformation into concepts in the course of subject learning. Thus, the task of developing knowledge / concepts will be combined with the task of developing thinking and learning activities in students (Universal Learning Actions).

4. Psychological training of a teacher. Communication competences and individualisation.

To our mind, there is another important area for further modernisation, which embraces a change in the nature, extent and content of the psychological training of teachers.

The psychological competency of a teacher plays an essential role in solving almost all major professional tasks by a teach-

er at school. Since significantly affecting the basic educational processes of knowledge construction, this competency plays an essential role in processes of individualisation of learning and overcoming difficulties that students face. Without psychological competency it is impossible to talk seriously about any kind of inclusion and consideration of the wide range special educational needs of students, whether working with students having disabilities or teaching students from migrant families. Psychological competency underlies the competencies of effectively communicating with students and their parents, maintaining discipline and a businesslike classroom atmosphere, effectively resolving conflicts and engaging in collaboration with colleagues. While this list can be continued, it is clear that psychological competency is one of the most important components of a teacher's qualification.

Although almost everyone now recognises the importance of psychological competency, until recently, it occupied an insignificant place in the curriculum of teacher education programmes. While in Soviet times, teacher education programmes included a little over 30 hours of psychological competency training, over the past decades their number has increased enormously, including in FSES 3+, but without undergoing any qualitative changes [22]. However, this still comprises only a slightly more extended course (or a set of courses) aimed at mastering a certain set of almost entirely theoretical knowledge, which in practice does not last for a very long time (usually up until the first exam). Typically no special connection is made between the content of such disciplines and the future activity of students. Of course, there were and certainly are gratifying exceptions, in which such courses are equipped with practical work and teachers aim show the connection of the studied psychological knowledge with the contents of the learning processes, upbringing and development of students — not just theoretic-

cally, but at the level of analysis of specific educational situations with supervision by a representative of the Psychological Department in collaboration with a colleague from the Methodological department. In general, though, if this happens in the best universities, it is not so much due to the standards of training, but rather in spite of them.

The implementation of the Project for the Modernisation of Teacher Education as described in the present paper is considered to be a dramatic step forward in psychological training of future teachers.

Firstly, we are talking about the possibility of including the necessary psychological content in the theoretical section of any professionally-oriented module, in which the student masters the approaches for tackling a particular professional task. The specific character of the activity-oriented content of both the module and the programme generally assumes that psychological knowledge is not so much memorised as mastered as an instrument of activity — that is, providing the possibility of applying it for solving the professional problem mastered in the module.

Secondly, those training profiles are highlighted where the total amount of psychological knowledge and related ways of actions should be significantly higher than for other profiles. In addition to the training of educational psychologists themselves, such programmes include training of preschool teachers, primary school teachers and counsellors. For all these categories of teachers, the project has developed and successfully piloted programmes within the framework of the common Psycho-Pedagogical Education foundation.

The implementation of training for teacher-psychologists, social teachers, as well as teachers of preschool education and primary school on a single methodological basis and within the same programme (not just pedagogical, but psycho-pedagogical education), while appearing to be an indisputable idea during the development of the project, was

nevertheless met with various reactions ranging from surprise to serious objections.

A fundamentally important reason in favour of such a solution is the age of students and the “degree of importance” of developmental tasks in the course of the integral process of education/ upbringing/ development. As shown by numerous studies, the role of developmental tasks can be decisive in early learning [5; 8]. It is in the case of early learning that the lack of timely psychological assistance leads to serious problems not only in further development, but also in subsequent learning and socialisation. Dealing with this age group requires the most “psychologised” teacher, who recognises the psychological dimension of his or her professional actions and knows how to interact effectively with a teacher-psychologist in solving problems related to the development, correction, inclusion and socialisation of a student. Since the ability to interact effectively with a teacher-psychologist implies being able to understand each other, to speak the same “professional language”, such a teacher must have the psychological training to ensure this understanding, i.e. he or she must be a teacher-psychologist — or rather, a psychologist-teacher — not only in terms of the title, but according to the extent and specifics of his or her professional training. One way to achieve this level of mutual understanding is to train a teacher and a psychologist within the same field of psycho-pedagogical education, in which they can both master the same invariant core of curriculum, providing a common basis for professional knowledge, moving on to different educational paths.

The option for training teachers in working with young students proposed and tested during the implementation of the project and documented following its completion in the appropriate parts of the new FSES 3++ allows the training of teachers for preschool and primary general education, not only within the framework of the traditional Pedagogical Education programme, but also

within the Psycho-Pedagogical Education programme.

Despite the obvious and qualitative changes in the nature of psychological competency and its role in the training of teachers, which was carried out within the framework of the modernisation project, the present state and level of psychological training of teachers are still far from ideal — or, for that matter, necessary.

In our opinion, this is connected with the content of training programmes and even more so with the very approach to what teacher education is and what the state and society have a right to expect from its graduates.

In a sense, teacher education can be viewed through the lens of realities of the present time as a kind of “magic device”. Such an amazing device should magically “transform” the applicants, regardless of their number, academic level, motivation and (which is fundamentally important for our case) individual psychological traits into a Professional, who is perfectly trained, being in love with the profession and sensitively aware of all the subtlest nuances of human thinking, personality and relationships. Moreover, all this should happen in 4 years and it does not matter who gets into this wonderful “device” of amazing transformations and what intentions this person has.

While we can possibly imagine the task of such professional training in terms of teaching or learning disconnected with the real characteristics of the subjects of such training, what we cannot imagine is the formation of professionally significant personal traits of a future teacher in a short period of study and without any connection with the psychological traits of applicants.

There is no reason to expect that a graduate of a teacher education programme will be able to organise the development of student thinking in the process of subject teaching through organising their cooperative analysis of the studied object and reflection on their actions, if his/her own ability

for analysis and reflection is not sufficient enough to fulfill — and in some cases even to understand — the essence of this professional task.

To what extent can we expect a young specialist after apprehending the pedagogical programme will be capable of creating a favourable psychological atmosphere, effectively resolving conflicts, being able to listen and hear not just endlessly talk and “broadcast”, if we know absolutely nothing about the necessary psychological characteristics of applicants in teacher education programmes?

In our view, both cases mentioned above indicate at least two important issues.

Firstly, the effective modernisation of teacher education cannot but affect the broader social context in which it is carried out — at least, that context associated with enrolment (applicants) and graduation (employment and start of independent professional activity).

Secondly, one should not completely blame the content and forms of teacher training for something that to a large extent also depends on the individual (including psychological) traits of the students enrolled in these programmes.

From this point of view, such projects as Teacher for Russia (the Russian equivalent of Teach for America) are quite remarkable. Since beyond the scope of the present paper, a more detailed analysis can be found in Margolis (2019) [12]. In the context of this discussion, it is necessary to limit ourselves to describing the main difference between this approach and traditional teacher education programmes, which certainly contain a rationale that should be analysed and taken into account in further modernisation plans.

This difference results from the fact that the programme selects candidates from non-teaching graduates of leading universities for the programme, followed by intensive practice-oriented teacher training in a highly competitive environment, which identified

the best-prepared candidates for teaching, including in terms of their individual (and psychological) traits.

This is totally different from the current system of getting applicants into teacher education programmes, which is based on the results of the Unified State Examination (USE) (as in most other fields and programmes). In fact, such a system becomes absurd when any applicant, regardless of his or her psychological traits, communicative competency, self-regulation ability (not to mention motivation), can become a teacher. Under such conditions, it should not be too surprising that, for many students thus enrolled in pedagogical programmes, getting into the class can become a serious challenge for the psyche (and in many cases not only theirs). Somehow, the idea that enrolment to a university of creative professions is based primarily on a test of creativity, which begins only for those who pass the USE, has managed to “force its way” into an extremely formalised system of enrolment without abolishing the universal principles of the USE. Perhaps the time has come to think about changing such a system for teacher education as well.

However, in order to form and develop the professionally significant personal characteristics of a future teacher, it is not enough to understand the psychology of a student who enrolls in such a programme. In fact, there are two different albeit interrelated ways for improving the psychological qualifications of a future teacher. First — through the formation of psychological competences necessary for solving certain professional tasks within the framework of mastering professionally oriented modules. Second — within the framework of holistic programmes for the development of professionally significant personality traits in the form of not only academic, but mainly educational and, above all, volunteer work. Currently, the educational programme is considered as something external to Basic Educational Programme, its results not being

directly related to the educational results of the FSES for Higher Education. Indeed, the requirements for the results of professional education contain only a list of professional competences (general and specific) and universal competences common to all areas of training. This apparently rather vague list of such universal competences was described by V. Davydov as “formally general” [6]. In addition, it remains completely unclear when, how and by whom such competences will be formed, thus in practice leading to massive “assignments” of universal competences to almost everything (reasonably or not).

In our view, the list of such competences in the context of teacher education should be substantially specified or supplemented. Specified or supplemented universal competences (some of which should be directly related to the educational task and the task of formation of professionally significant personal traits of a future teacher) should be included in the FSES for Higher Pedagogical Education and supplemented with a description of the programme for the achieving such results, including an educational programme (as well as volunteer activity) and a personal development programme equipping any future teacher with those practical psychological “skills and abilities”, behavioural patterns and personality traits, without which his/her professional activity cannot be successful.

5. The fifth suggestion for the further development of teacher education concerns the creation of a modern technological educational environment for the training of future teachers based on the use of simulators, video case libraries, digital and cognitive technologies, including augmented and virtual reality technologies. However, a separate publication is needed to describe in more detail what such an environment should be like, as well as what digital competencies a future teacher should possess, taking into account possible changes in the division of teaching labour and the changing nature of some job functions.

References

1. Altynikova N.V., Muzaev A.A. Otsenka predmetnykh i metodicheskikh kompetentsii uchitelei: aprobatsiya edinykh federal'nykh otsenochnykh materialov [Subject and Methodological Competencies in Teachers: Testing the Unified Federal Evaluation Tools]. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2019. Vol. 24, no. 1, pp. 31—41. DOI:10.17759/pse.2019240102. (In Russ.)
2. Bocharova N.A., Pisareva S.A., Puchkov M.Yu., Snegurova V.I., Tryapitsyna A.P. Kontseptsiya urovnya otsenki kompetentsii uchitelya [Concept of teacher's competences level evaluation]. *Chelovek i obrazovanie = Man and Education*, 2017, no. 3(52), pp. 164—171. (In Russ.)
3. Vygotskii L.S. Razvitie zHITEISKIKH i nauchnykh ponyatii v shkol'nom vozraste (stenogramma doklada v Leningradskom pedologicheskome institute 20.05.1933) [The development of everyday and scientific concepts at school age (transcript of the report at the Leningrad Pedological Institute 05/20/1933)]. Vygotskii L.S. *Umstvennoe razvitie detei v protsesse obucheniya [Mental development of children in the learning process]*. Moscow: Uchpedgiz, 1935. 96—115 pp. (In Russ.)
4. Vygotskii L.S. K voprosu o razvitii nauchnykh ponyatii v shkol'nom vozraste: Predislovie [On the development of scientific concepts at school age: Preface]. Zh.I. Shif. *Razvitie nauchnykh ponyatii u shkol'nika [The development of scientific concepts in a schoolboy]*. Moscow; Leningrad: Publ. Gos. ucheb. pedagog., 1935. 80 p. (In Russ.)
5. Guruzhapov V.A., Margolis A.A. Proektirovanie modeli praktiko-orientovannoi podgotovki pedagogicheskikh kadrov po programmam bakalavriata po napravleniyu podgotovki «Psikhologo-pedagogicheskoe obrazovanie» (Uchitel' nachal'nykh klassov) na osnove setevogo vzaimodeistviya obrazovatel'nykh organizatsii, realizuyushchikh programmy vysshego obrazovaniya i nachal'nogo obshchego obrazovaniya [Designing Models of Practice-oriented Undergraduate Training Program in Psychological and Pedagogical Education (Primary school teacher) Based on Networking of Educational Institutions, Implementing Higher Education and Primary Education Programs]. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2014. Vol. 19, no. 3, pp. 143—159. (In Russ.)
6. Davydov V.V. Vidy obobshcheniya v obuchenii: Logiko-psikhologicheskie problemy postroeniya uchebnykh predmetov [Types of generalization in teaching: Logical and psychological problems of the construction of educational subjects]. Moscow: Pedagogika, 1972. 424 p. (In Russ.)
7. Davydov V.V. Teoriya razvivayushchego obucheniya: monografiya. [Theory of Developmental Learning: Monograph]. Moscow: Intor, 1996. 544 p. (In Russ.)
8. Davydov V.V. Problemy razvivayushchego obucheniya: Opyt teoreticheskogo i eksperimental'nogo psikhologicheskogo issledovaniya. [Developmental Learning Problems: The Experience of Theoretical and Experimental Psychological Research]. Moscow: Pedagogika, 1986. 240 p. (In Russ.)
9. Kompleksnaya programma povysheniya professional'nogo urovnya pedagogicheskikh rabotnikov obshcheobrazovatel'nykh organizatsii [Comprehensive program for improving the professional level of teaching staff of educational organizations]. RP. No. 3241p-P8 of 28.05.2014. (In Russ.)
10. Krouli E. i dr. Pereosmyslenie inzhenernogo obrazovaniya: Podkhod CDIO [Rethinking Engineering Education: The CDIO Approach]. Moscow: NIU VShE, 2015. 502 p. (In Russ.)
11. Kontseptsiya issledovaniya predmetnykh i metodicheskikh kompetentsii uchitelei [The concept of research of subject and methodological competencies of teachers]. Akademiya prosveshcheniya Publ. «Prosveshchenie», 2018. 43 p. (In Russ.)
12. Margolis A.A. Modernizatsiya pedagogicheskogo obrazovaniya v Rossiiskoi Federatsii [Modernization of teacher education in the Russian Federation]. Moscow: FGBOU VO MGPPU, 2019. 336 p. (In Russ.)
13. Margolis A.A., Safronova M.A., Panfilova A.S., Shishlyannikova L.M. Itogi nezavisimoi otsenki sformirovannosti obshcheprofessional'nykh kompetentsii u budushchikh pedagogov [Outcomes of Independent Evaluation of General Professional Competencies in Future Teachers]. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2018. Vol. 23, no. 1, pp. 64—81. DOI:10.17759/pse.2018230106. (In Russ.)
14. Margolis A.A. Modeli podgotovki pedagogov v ramkakh programm prikladnogo bakalavriata i pedagogicheskoi magistratury [Teacher Training Models in Applied Bachelor and Pedagogical Master Programs]. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2015. Vol. 20, no. 5, pp. 45—64. DOI:10.17759/pse.2015200505. (In Russ.)
15. Margolis A.A. Trebovaniya modernizatsii osnovnykh professional'nykh obrazovatel'nykh programm (OPOP) podgotovki pedagogicheskikh kadrov v sootvetstvii s professional'nym standartom pedagoga: predlozheniya k realizatsii deyatel'nostnogo podkhoda v podgotovke pedagogicheskikh kadrov [The Requirements for the Modernization of Basic Professional Education Program (BPEP) of Teachers Training in Accordance with the Professional Standard of the Teacher: Proposals for the Implementation of the Activity Approach in Teachers Training]. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2014. Vol. 19, no. 3, pp. 105—126. (In Russ.)
16. Margolis A.A., Safronova M.A. Itogi kompleksnogo proekta po modernizatsii pedagogicheskogo

- obrazovaniya v Rossiiskoi Federatsii (2014—2017 gg.) [The Project of Modernisation of Teacher Education in the Russian Federation: Outcomes 2014—2017]. *Psikhologicheskaya nauka i obrazovanie = Psychological Science and Education*, 2018. Vol. 23, no. 1, pp. 5—24. DOI:10.17759/pse.2018230101. (In Russ.)
17. Otchet po rezul'tatam mezhdunarodnogo issledovaniya uchitel'skogo korpusa po voprosam prepodavaniya i obucheniya TALIS-2018 (Teaching and Learning International Survey). Chast' 1. Nepriyornoe obuchenie uchitelei i direktorov shkol [Report on the results of the international research of the teaching staff on teaching and learning TALIS-2018 (Teaching and Learning International Survey). Part 1. Continuing education for teachers and school principals]. Moscow, 2019. 41 p. (In Russ.)
18. Prikaz Ministerstva obrazovaniya i nauki RF № 122 ot 22.02.2018 «Ob utverzhdenii federal'nogo gosudarstvennogo obrazovatel'nogo standarta vysshego obrazovaniya-bakalavriata po napravleniyu 44.03.02 Psikhologo-pedagogicheskoe obrazovanie» [Electronic resource] [Order of the Ministry of Education and Science of the Russian Federation No. 122 dated 02.22.2018 "On the approval of the federal state educational standard of higher education-bachelor's degree in the direction 44.03.02 Psychological and pedagogical education"]. Informatsionno-pravovoi portal «Garant.ru». URL: <https://www.garant.ru/products/ipo/prime/doc/71797860/> (Accessed 15.09.2020). (In Russ.)
19. Prikaz Ministerstva obrazovaniya i nauki RF № 127 ot 22.02.2018 «Ob utverzhdenii federal'nogo gosudarstvennogo obrazovatel'nogo standarta vysshego obrazovaniya-magistratura po napravleniyu 44.04.02 Psikhologo-pedagogicheskoe obrazovanie» [Electronic resource] [Order of the Ministry of Education and Science of the Russian Federation No. 127 dated 02.22.2018 "On the approval of the federal state educational standard for higher education — magistracy in the direction 44.04.02 Psychological and pedagogical education"]. Informatsionno-pravovoi portal «Garant.ru». URL: <https://www.garant.ru/products/ipo/prime/doc/71796296/> (Accessed: 15.09.2020). (In Russ.)
20. Poruchenie Prezidenta Rossii po voprosam povysheniya kachestva vysshego obrazovaniya Pr-1148, p. 2 ot 22 maya 2014 [Elektronnyi resurs] [Instruction of the President of Russia on improving the quality of higher education Pr-1148, p. 2 of May 22, 2014]. URL: <http://www.kremlin.ru/assignments/21112> (Accessed: 15.09.2020). (In Russ.)
21. Prikaz Ministerstva obrazovaniya i nauki Rossiiskoi Federatsii ot 17.12.2010 g. № 1897 «Ob utverzhdenii federal'nogo gosudarstvennogo obrazovatel'nogo standarta osnovnogo obshchego obrazovaniya» [Elektronnyi resurs] [Order of the Ministry of Education and Science of the Russian Federation of 17.12.2010 № 1897 "On approval of the federal state educational standard of basic general education"]. Internet-portal «Rossiiskoi Gazety». 19 dekabrya 2010 g. URL: <http://www.rg.ru/2010/12/19/obrstandart-site-dok.html> (Accessed: 15.09.2020). (In Russ.)
22. Prikaz Ministerstva obrazovaniya i nauki RF ot 22 dekabrya 2009 g. № 788 «Ob utverzhdenii i vvedenii v deistvie federal'nogo gosudarstvennogo obrazovatel'nogo standarta vysshego professional'nogo obrazovaniya po napravleniyu podgotovki 050100 Pedagogicheskoe obrazovanie (kvalifikatsiya (stepen') "bakalavr")» (s izmeneniyami ot 31 maya 2011 g.) [Elektronnyi resurs] [Order of the Ministry of Education and Science of the Russian Federation of December 22, 2009 No. 788 "On the approval and implementation of the federal state educational standard of higher professional education in the direction of training 050100 Pedagogical education (qualification (degree) "bachelor") (as amended on May 31 2011 g.)]. URL: <http://fgosvo.ru/uploadfiles/fgos/5/20111207163943.pdf> (Accessed: 15.09.2020). (In Russ.)
23. Prikaz Ministerstva obrazovaniya Rossiiskoi Federatsii № 1313 ot 01.04.2003 «O programme modernizatsii pedagogicheskogo obrazovaniya» [Elektronnyi resurs] [Order of the Ministry of Education of the Russian Federation No. 1313 dated 04/01/2003 "On the program for the modernization of pedagogical education"]. Informatsionno-pravovoi portal «Garant.ru». URL: <https://base.garant.ru/1592956/> (Accessed: 15.09.2020). (In Russ.)
24. Prikaz Mintruda Rossii № 544n ot 18 oktyabrya 2013 g. «Ob utverzhdenii professional'nogo standarta "Pedagog (pedagogicheskaya deyatel'nost' v sfere doshkol'nogo, nachal'nogo obshchego, osnovnogo obshchego, srednego obshchego obrazovaniya) (vospitatel', uchitel')"» [Elektronnyi resurs] [Order of the Ministry of Labor of Russia No. 544n of October 18, 2013 "On the approval of the professional standard" Teacher (pedagogical activity in the field of preschool, primary general, basic general, secondary general education) (educator, teacher)"]. Ministerstvo truda i sotsial'noi za-shchity. Bank Dokumentov. URL: <http://www.rosmintrud.ru/docs/mintrud/orders/129> (Accessed: 15.09.2020). (In Russ.)
25. Sobkin V.S. Sotsiologiya obrazovaniya. Trudy po sotsiologii obrazovaniya. Tom 14. Vyp. 24 [Sociology of education. Works on the Sociology of Education. Vol. 14, no. 24]. In Sobkin V.S. (eds.). Moscow: Institut sotsiologii obrazovaniya RAO, 2010. 191 p. (In Russ.)
26. Fopel' K. Na poroge vzrosloi zhizni: Psikhologicheskaya rabota s podrostkovymi i yunosheskimi problemami. Tsennosti, tseli i interesy. Shkola i ucheba. Rabota i dosug: per. s nem. [On the threshold of adulthood: Psychological work with adolescent and youthful problems. Values, goals and

- interests. School and study. Work and leisure]. Moscow: Genezis, 2008. 208 p. (In Russ.)
27. A teacher education model for the 21st century [Elektronnyi resurs]. *A report by the National institute of education, Singapore*, 2010. 12 p. URL: https://www.nie.edu.sg/docs/default-source/te21_docs/te21_executive-summary_14052010---updated.pdf?sfvrsn=2 (Accessed: 15.09.2014).
28. Chi M.T.H. Three types of conceptual change: Belief revision, mental model transformation, and categorical shift. In Vosniadou S. (Ed.). *Handbook of research on conceptual change*. Hillsdale, NJ: Erlbaum, 2008, pp. 61—82.
29. Cochran-Smith M., Lytle S. The teacher research movement: A decade later. *Educational Researcher*, 1999. Vol. 28(7), pp. 15—25. DOI: 10.3102/0013189X028007015.
30. Darling-Hammond L. Constructing 21-st century teacher education [Elektronnyi resurs]. *Journal of Teacher Education*, 2006. Vol. 57, pp. 1—15. DOI: 10.1177/0022487105285962.
31. Donald A. Schön. *The reflective practitioner: How professionals think in action*. New York: Basic Books, 374 p.
32. Gage N. *The scientific basis of the art of teaching*. New York: John Wiley, 1978. 122 p.
33. Grossman P., Hammerness K., McDonald M. Redefining teaching, re-imagining teacher education. *Teachers and Teaching: Theory and Practice*, April 2009. Vol. 15, no. 2, pp. 273—289.
34. Hattie J. *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. London; New York: Routledge, Taylor & Francis Group, 2009. 379 p.
35. Hattie J. *Visible learning for teachers: maximizing impact on learning*. London; New York, 2012. 296 p.
36. Kleinhenz E., Ingvarson L. Standards for teaching: Theoretical underpinnings and applications. *Teaching Standards and Teacher Evaluation*, 2007, pp. 1.
37. Lave J., Wenger E. *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press, 1991. 138 p.
38. Pantic N., Wubbels T. Competence-based teacher education: A change from Didaktik to a Curriculum culture? [Elektronnyi resurs]. *Journal of Curriculum Studies*, 2012. Vol. 44, no. 1, pp. 61—83. DOI:10.1080/00220272.2011.620633
39. Peter von Huizen, Bert von Oers, Theo Wubbels. A Vygotskian perspective on teacher education. *Journal of Curriculum Studies*, 2005. Vol. 37: 3, pp. 267—290.
40. Preparing teachers around the world. ETS policy brief, 2003. 50 p.
41. Sahlberg P. *The secret to Finland's success: Educating teachers*. Stanford Center for Opportunity Policy in Education. Stanford University, 2010. 8 p.
42. Shulman L.S. Toward a pedagogy of cases. In J. Shulman (Ed.). *Case Study Methods in Teacher Education*. New York: Teachers College Press, 1992, pp. 1—30).
43. Smagorinsky P. Is Instructional Scaffolding Actually Vygotskian, and Why Should It Matter to Literacy Teachers? *Journal of Adolescent & Adult Literacy*, 2018. Vol. 62, no. 3. pp. 253—257.
44. Stenhouse L. *An introduction to curriculum research and development*. London: Heinemann, 1975. 248 p.
45. Teachers matter: attracting, developing and retaining effective teachers. OECD, 2005. 12 p.
46. The clinical preparation of teachers: A policy brief. American association of colleges for teacher education, 2010. 22 p.
47. Toom A., Krokfors L., Kynäslähti H., Stenberg K., Maaranen K., Jyrhämä R., Byman R. Kansanen P. Exploring the essential characteristics of research-based teacher education from the viewpoint of teacher educators [Elektronnyi resurs]. In B. Åstrand, E. Eisenschmidt, B. Hudson, M. Lampere, P. Zgaga (Ed.). *Proceedings of Second Annual Teacher Education Policy in Europe Network (TEPE) Conference: Mapping the landscape and looking to the future*. 2008, pp. 166—179. URL: <http://www.pef.uni-lj.si/tepe2008/documents/TEPE%20proceedings.pdf> (Accessed 25.04.2020)
48. Ulvik M., Smith K. What characterises a good practicum in teacher education. *Education Inquiry*, 2011. Vol. 2(3), September, pp. 517—536.
49. Vosniadou S. The Development of Students' Understanding of Science [Elektronnyi resurs]. *Frontiers in Education*, 2019. Vol. 4. DOI: 10.3389/educ.2019.00032
50. Vosniadou S. Reframing the classical approach to conceptual change: Preconceptions, misconceptions and synthetic models [Elektronnyi resurs]. In Frazer B., Tobin K., McRobbie C. (eds). *Second International Handbook of Science Education. Springer International Handbooks of Education*. Springer, Dordrecht, 2012. Vol. 24, pp. 119—130. DOI: 10.1007/978-1-4020-9041-7_10
51. Wilson D., Floden R., Ferrini-Mundy J. *Teacher preparation research: Current knowledge, gaps and recommendations*. Washington: D.C, Center for the study of teaching and policy, University of Washington, 2001. 84 p.
52. Zeichner K. Alternative paradigms of teacher education. *Journal of Teacher Education*, 1983. Vol. 34(3), pp. 3—9. DOI: 10.1177/002248718303400302
53. Zeichner K., Payne K., Brayko K. Democratizing knowledge in university teacher education through practice-based methods teaching and mediated field experience in schools and communities. Issue Paper. University of Washington-Seattle Center for the Study of Teacher Learning in Practice. January, 2012. 46 p.

Литература

1. Алтыникова Н.В., Музаев А.А. Оценка предметных и методических компетенций учителей: апробация единых федеральных оценочных материалов // Психологическая наука и образование. 2019. Том 24. № 1. С. 31—41. DOI: 10.17759/pse.2019240102
2. Бочарова Н.А., Писарева С.А., Пучков М.Ю., Снегурова В.И., Тряпицына А.П. Концепция уровневой оценки компетенций учителя // Человек и образование. 2017. № 3(52). С. 164—171.
3. Выготский Л.С. Развитие житейских и научных понятий в школьном возрасте (стенограмма доклада в Ленинградском педологическом институте 20.05.1933) // Выготский Л.С. Умственное развитие детей в процессе обучения. М: Учпедгиз, 1935. С. 96—115.
4. Выготский Л.С. К вопросу о развитии научных понятий в школьном возрасте: Предисловие // Ж.И. Шиф. Развитие научных понятий у школьника. М; Л: Гос. учеб. педагог. изд-во, 1935. 80 с.
5. Гуружапов В.А., Марголис А.А. Проектирование модели практико-ориентированной подготовки педагогических кадров по программам бакалавриата по направлению подготовки «Психолого-педагогическое образование» (Учитель начальных классов) на основе сетевого взаимодействия образовательных организаций, реализующих программы высшего образования и начального общего образования // Психологическая наука и образование. 2014. Том 19. № 3. С. 143—159.
6. Давыдов В.В. Виды обобщения в обучении: Логико-психологические проблемы построения учебных предметов. М.: Педагогика, 1972. 424 с.
7. Давыдов В.В. Теория развивающего обучения: монография. М.: Интор, 1996. 544 с.
8. Давыдов В.В. Проблемы развивающего обучения: Опыт теоретического и экспериментального психологического исследования. М.: Педагогика, 1986. 240 с.
9. Комплексная программа повышения профессионального уровня педагогических работников общеобразовательных организаций // РП. № 3241п-П8 от 28.05.2014.
10. Кроули Э. и др. Переосмысление инженерного образования: Подход CDIO. М.: НИУ ВШЭ, 2015. 502 с.
11. Концепция исследования предметных и методических компетенций учителей / Академия просвещения Издательства «Просвещение», 2018. 43 с.
12. Марголис А.А. Модернизация педагогического образования в Российской Федерации. М.: ФГБОУ ВО МГППУ, 2019. 336 с.
13. Марголис А.А., Сафронова М.А., Панфилова А.С., Шишляникова Л.М. Итоги независимой оценки сформированности общепрофессиональных компетенций у будущих педагогов // Психологическая наука и образование. 2018. Том 23. № 1. С. 64—81. DOI: 10.17759/pse.2018230106
14. Марголис А.А. Модели подготовки педагогов в рамках программ прикладного бакалавриата и педагогической магистратуры // Психологическая наука и образование. 2015. Том 20. № 5. С. 45—64. DOI: 10.17759/pse.2015200505
15. Марголис А.А. Требования к модернизации основных профессиональных образовательных программ (ОПОП) подготовки педагогических кадров в соответствии с профессиональным стандартом педагога: предложения к реализации деятельностного подхода в подготовке педагогических кадров // Психологическая наука и образование. 2014. Том 19. № 3. С. 105—126.
16. Марголис А.А., Сафронова М.А. Итоги комплексного проекта по модернизации педагогического образования в Российской Федерации (2014—2017 гг.) // Психологическая наука и образование. 2018. Том 23. № 1. С. 5—24. DOI:10.17759/pse.2018230101
17. Отчет по результатам международного исследования учительского корпуса по вопросам преподавания и обучения TALIS-2018 (Teaching and Learning International Survey). Часть 1. Непрерывное обучение учителей и директоров школ. М. 2019. 41 с.
18. Приказ Министерства образования и науки РФ № 122 от 22.02.2018 «Об утверждении федерального государственного образовательного стандарта высшего образования-бакалавриата по направлению 44.03.02 Психолого-педагогическое образование» [Электронный ресурс] // Информационно-правовой портал «Гарант.ру». URL: <https://www.garant.ru/products/ipo/prime/doc/71797860/> (дата обращения: 15.09.2020).
19. Приказ Министерства образования и науки РФ № 127 от 22.02.2018 «Об утверждении федерального государственного образовательного стандарта высшего образования-магистратура по направлению 44.04.02 Психолого-педагогическое образование» [Электронный ресурс] // Информационно-правовой портал «Гарант.ру». URL: <https://www.garant.ru/products/ipo/prime/doc/71796296/> (дата обращения: 15.09.2020).
20. Поручение Президента России по вопросам повышения качества высшего образования Пр-1148, п. 2 от 22 мая 2014 [Электронный ресурс]. URL: <http://www.kremlin.ru/assignments/21112> (дата обращения: 15.09.2020).
21. Приказ Министерства образования и науки Российской Федерации от 17.12. 2010 г. № 1897 «Об утверждении федерального государственного образовательного стандарта основного общего образования» [Электронный ресурс] // Интернет-портал «Российской Газеты». 19 декабря 2010 г.

- URL: <http://www.rg.ru/2010/12/19/obrstandart-site-dok.html> (дата обращения: 15.09.2020).
22. Приказ Министерства образования и науки РФ от 22 декабря 2009 г. № 788 «Об утверждении и введении в действие федерального государственного образовательного стандарта высшего профессионального образования по направлению подготовки 050100 Педагогическое образование (квалификация (степень) «бакалавр»)» (с изменениями от 31 мая 2011 г.) [Электронный ресурс]. URL: <http://fgosvo.ru/uploadfiles/fgos/5/20111207163943.pdf> (дата обращения: 15.09.2020).
23. Приказ Министерства образования Российской Федерации № 1313 от 01.04.2003 «О программе модернизации педагогического образования» [Электронный ресурс] // Информационно-правовой портал «Гарант.ру». URL: <https://base.garant.ru/1592956/>(дата обращения: 15.09.2020).
24. Приказ Минтруда России № 544н от 18 октября 2013 г. «Об утверждении профессионального стандарта “Педагог (педагогическая деятельность в сфере дошкольного, начального общего, основного общего, среднего общего образования) (воспитатель, учитель)”» [Электронный ресурс] // Министерство труда и социальной за- щиты. Банк Документов. URL: <http://www.rosmintrud.ru/docs/mintrud/orders/129> (дата обращения: 15.09.2020).
25. Собкин В.С. Социология образования. Труды по социологии образования. Том 14. Вып. 24 / Под ред. В.С. Собкина. М.: Институт социологии образования РАО, 2010. 191 с.
26. Фопель К. На пороге взрослой жизни: Психологическая работа с подростковыми и юношескими проблемами. Ценности, цели и интересы. Школа и учеба. Работа и досуг: пер. с нем. М.: Генезис, 2008. 208 с.
27. A teacher education model for the 21century [Электронный ресурс] // A report by the National institute of education, Singapore. 2010. 12 p. URL: https://www.nie.edu.sg/docs/default-source/te21_docs/te21_executive-summary_14052010---updated.pdf?sfvrsn=2 (дата обращения: 15.09.2014).
28. Chi M.T.H. Three types of conceptual change: Belief revision, mental model transformation, and categorical shift // Handbook of research on conceptual change / S. Vosniadou (Ed.). Hillsdale, NJ: Erlbaum, 2008. P. 61—82
29. Cochran-Smith M., Lytle S. The teacher research movement: A decade later // Educational Researcher. 1999. Vol. 28(7). P. 15—25. DOI: 10.3102/0013189X028007015
30. Darling-Hammond L. Constructing 21-st century teacher education [Электронный ресурс] // Journal of Teacher Education. 2006. Vol. 57. P. 1—15. DOI: 10.1177/0022487105285962.
31. Donald A. Schön. The reflective practitioner: How professionals think in action. N.Y.: Basic Books. 374 p.
32. Gage N. The scientific basis of the art of teaching. N.Y.: John Wiley, 1978. 122 p.
33. Grossman P., Hammerness K., McDonald M. Redefining teaching, re-imagining teacher education / Teachers and Teaching: Theory and Practice. April 2009. Vol. 15. № 2. P. 273—289.
34. Hattie J. Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement. London; New York: Routledge, Taylor & Francis Group, 2009. 379 p.
35. Hattie J. Visible learning for teachers: maximizing impact on learning. London; New York, 2012. 296 p.
36. Kleinhenz E., Ingvarson L. Standards for teaching: Theoretical underpinnings and applications // Teaching Standards and Teacher Evaluation. 2007. P. 1.
37. Lave J., Wenger E. Situated learning: Legitimate peripheral participation. Cambridge: Cambridge University Press, 1991. 138 p.
38. Pantic N., Wubbels T. Competence-based teacher education: A change from Didaktik to a Curriculum culture? [Электронный ресурс] // Journal of Curriculum Studies. 2012. Vol. 44. № 1. P. 61—83. DOI:10.1080/0220272.2011.620633
39. Peter von Huizen, Bert von Oers, Theo Wubbels. A Vygotskian perspective on teacher education // Journal of Curriculum Studies. 2005. Vol. 37: 3. P. 267—290.
40. Preparing teachers around the world. ETS policy brief, 2003. 50 p.
41. Sahlberg P. The secret to Finland’s success: Educating teachers. Stanford Center for Opportunity Policy in Education. Stanford University, 2010. 8 p.
42. Shulman L.S. Toward a pedagogy of cases // Case methods in teacher education / J.H. Shulman (Ed.). New York: Teachers College Press. 1992. P. 1—30.
43. Smagorinsky P. Is Instructional Scaffolding Actually Vygotskian, and Why Should It Matter to Literacy Teachers? // Journal of Adolescent & Adult Literacy. 2018. Vol. 62. № 3. P. 253—257.
44. Stenhouse L. An introduction to curriculum research and development. London: Heinemann, 1975. 248 p.
45. Teachers matter: attracting, developing and retaining effective teachers. OECD, 2005. 12 p.
46. The clinical preparation of teachers: A policy brief. American association of colleges for teacher education, 2010. 22 p.
47. Toom A., Krokfors L., Kynäslähti H., Stenberg K., Maaranen K., Jyrhämä R., Byman R. Kansanen P. Exploring the essential characteristics of research-based teacher education from the viewpoint of teacher educators [Электронный ресурс] // Proceedings of Second Annual Teacher Education Policy in Europe Network (TEPE) Conference: Mapping the landscape and looking to the future / B. Åstrand, E. Eisenschmidt, B. Hudson, M. Lampere, P. Zgaga (Ed.). 2008. P. 166—179. URL: <http://www.pef.uni-ij.si/tepe2008/documents/>

- TEPE%20proceedings.pdf (дата обращения 25.04.2020)
48. *Ulvik M., Smith K.* What characterises a good practicum in teacher education // *Education Inquiry*. 2011. Vol. 2(3), September. P. 517—536.
49. *Vosniadou S.* The Development of Students' Understanding of Science [Электронный ресурс] // *Frontiers in Education*. 2019. Vol. 4. DOI: 10.3389/educ.2019.00032
50. *Vosniadou S.* Reframing the classical approach to conceptual change: Preconceptions, misconceptions and synthetic models [Электронный ресурс] // *Second International Handbook of Science Education*. Springer International Handbooks of Education / Fraser B., Tobin K., McRobbie C. (eds). Springer, Dordrecht. 2012. Vol. 24. P. 119—130. DOI: 10.1007/978-1-4020-9041-7_10
51. *Wilson D., Floden R., Ferrini-Mundy J.* Teacher preparation research: Current knowledge, gaps and recommendations. Washington: D.C, Center for the study of teaching and policy, University of Washington, 2001. 84 p.
52. *Zeichner K.* Alternative paradigms of teacher education, 1983 // *Journal of Teacher Education*. 1983. Vol. 34(3). P. 3—9. DOI: 10.1177/002248718303400302
53. *Zeichner K., Payne K., Brayko K.* Democratizing knowledge in university teacher education through practice-based methods teaching and mediated field experience in schools and communities. Issue Paper. University of Washington-Seattle Center for the Study of Teacher Learning in Practice. January, 2012. 46 p.

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