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Designing an independently installed educational standard for 'Teacher Education'

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Abstract

The problem of creating self-established educational standards (SES) is considered by the authors associated with the need to ensure the quality of educational programs and quality of preparation of the future teacher to solve new professional problems. The present work is aimed at scientifically recognising the technology of designing SES. **Research methods:** theoretical (analysis, synthesis and modelling) and empirical: survey methods (questioning and interviewing). Based on the results of employers' satisfaction survey (*n* = 112), the quality of teacher training and self-assessment of the preparation of graduates of a pedagogical university (*n* = 123) to perform work functions were defined an algorithm for developing SES in the direction of 'Pedagogical education', including analytical and diagnostic, modelling and reflexive stages. In general, the technology of preparing and introducing an SES ensures the integration of pedagogical science and practice and the development of continuous pedagogical education in the context of a regional scientific and educational cluster.

Keywords: Pedagogy, vocational education, pedagogical education, teacher education.

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1. Introduction

The educational institutions and the training provided at these institutions have emerged as a need for individuals in society to be more prepared for the present and future life. The education given in educational institutions is more important in the formal dimension and the individuals and institutions in the society care about the purpose, the program and the educational ethics given to the education given (Erdem & Altunsaray, 2016).

Key questions related to the initial education of future teachers are the issues related to the teacher, particularly: How the teacher should be? Which knowledges, abilities, skills and competences he/she should have in order to fulfil his/her role and work successfully? In this context, this paper refers to one of the three previously named aspects, particularly, the role of the teacher as educator, analysed from the aspect of students—future teachers in natural sciences (Mitevski, Petrusheva & Bijana, 2017). The models used in teacher education are very important.

The preparation of specialists who are ready and able to 'respond' to all the changes taking place in society, able to anticipate and predict the profound changes in vocational activity, is the most important problem of the modern vocational education (Fugelova, 2018). In the last decade, the problem of developing an self-established educational standards (SES) by leading domestic universities has been actively discussed by the academic public at forums, symposia, conferences and pages of professional journals, indicating that federal and national research universities successfully implement their right to independently develop and establish educational standards, granted by Federal Law No. 273 of December 29, 2012 'On Education in the Russian Federation'.

Studying the problems of designing an SES in national research universities and universities of classical type shows that they are being actively developed and implemented at the level of the magistracy, with the preference provided to natural science, economics and polytechnic areas.

The purpose of pedagogical training curriculum is to benefit from the graduates of primarily science and literature faculties and other faculties and high schools, together with graduates from education faculties along with university graduates, in order to meet the increasing need for teachers. In our opinion, scientific publications and the websites of universities do not sufficiently reflect the problems of preparing and introducing an SES in the direction of 'Pedagogical Education'. At the same time, we note that SES is a new phenomenon for our university. The development of standards in the direction of 'Pedagogical education' in Belgorod State University began in 2017.

In the regional educational area, the Pedagogical Institute of Belgorod State National Research University is considered as a platform for providing educational organisations of various levels with qualified pedagogical personnel: pre-school institutions, basic general and additional education institutions. One of the main purposes of its development program is the creation of a regional scientific and educational cluster, ensuring the integration of educational science and practice.

We believe that the introduction of the algorithm for the development of an SES in the direction of 'Pedagogical Education' will first help get rid of the general nature of the wording of competencies in the GEF VO that does not reflect the qualification requirements of the professional standard 'Teacher'. Second, it will allow a more correct presentation of the competence model of graduates, while considering the current trends in the development of education system in the region. Third, it will contribute to reflect the peculiarities of the scientific and socio-cultural environment, the priorities of the university as well as creating optimal conditions for the integration of educational science and practice. In general, all this will positively affect the solution of the cardinal state task—improving the quality of education at all levels, from preschool to vocational.

The study and analysis of scientific publications on a given problem and their own experience in the development of an SES allowed determining modern approaches to their design (Lobov, 2013). This was the starting point for the development of the algorithm for creating an SES and the selection of research methods: analysis, modelling, generalisation, surveys and questionnaires.

The analysed scientific publications substantiate the concepts and experience in developing the SES of higher education in Russia (Aleksandrov, Korshunov & Tsvetkov, 2014; Chuchalin, 2015). In a number of these works, the meanings of designing an SES for specific higher educational institutions are revealed as follows:

- Significance of the SES to increase the competitiveness of educational programs;
- The need to maximise consideration of employers' requests;
- Empowerment of the integration of science and practice;
- Activation of the innovation component in the content and technologies of vocational training.

Analysis of the experience of organising higher education abroad shows that each educational institution prepares students for its own standards, programs and issues in diplomas of its own type (Voloshina, Vorobeva & Lashchenko, 2017). Numerous publications in the past 5 years reflect the experience of foreign universities in the preparation and creation of an SES. For instance, granting greater organisational and academic autonomy to European universities is considered to be a crucial step in the modernisation of education in the 21st century (Estermann, 2015). European universities can independently establish the areas of activity (Estermann, 2015). Attempts to codify and unify standards are analysed; however, they are considered unsuccessful (Sadler, 2014). State and public institutions establish only a 'frame' in which basic requirements for the content and results of education are included (for example, this is Common Core in the USA). Potential quality indicators of academic education are also being investigated in Australia (Coates, 2010). For South African universities, some algorithms are developed, according to which it is determined whether one or another competency should be included in the standard (du Plessis & Van Niekerk, 2014). There is an experience of joint curriculum development by university teachers and students in the UK, Ireland and the USA (Bovill, 2014). The publications also reflect how to bring the system of assessment of students' competencies in accordance with the requirements of the established standards (Reprintsev, Zuykov, Shumeyko, Lesnikova & Panfilova, 2018). For instance, at the University of Hong Kong, the principle of 'constructive alignment' has been introduced: the standard required learning outcomes should be known to students in advance in order to improve the quality of education and students' understanding of the fairness of grades (Biggs, 2014).

1.1. Purpose of the study

In our opinion, scientific publications and the websites of universities do not sufficiently reflect the problems of preparing and introducing an SES in the direction of 'Pedagogical Education'. The purpose of the present paper is to scientifically substantiate the algorithm for developing the SES of undergraduate and undergraduate studies in the field of 'Pedagogical Education'.

At the same time, we note that SES is a new phenomenon for our university.

2. Method

The method used in this study at scientifically recognising the technology of designing SES. Research methods: theoretical (analysis, synthesis and modelling) and empirical: survey methods (questioning and interviewing). The material used was the study of the domestic and foreign universities' experience to create an SES, aimed at identifying targets and mechanisms for their development.

2.1. Research group

Young teachers should assess their preparation to solve professional problems using the scale. 123 university graduates participated in the survey, among which at the time of the survey 41.5% had

pedagogical work experience up to a year, 7.3%—from 1 to 3 years and 51.2%—had no work experience.

3. Results

Below is the algorithm of actions for the development of an SES in the direction of 'Pedagogical Education', providing coordination and cooperation between the activities of universities and the regional education system.

The purpose of the analytical and diagnostic stage is to establish the correspondence between the requirements for professional activity stated in the professional standard 'Teacher' and the standard of the Federal State Educational Standards of Higher Education in the direction of 'Pedagogical Education' and the expectations of employers. According to the results of the survey in 2017, out of 112 managers of educational institutions, 71.3% were generally satisfied with the quality of training of beginning teachers, 10.7% were fully satisfied and 17% were partially satisfied. The respondents' concern is aroused by the preparation of graduates, 1) to set various types of educational tasks and organise their solution in accordance with the level of cognitive and personal development of young children; 2) to design and adjust the student's individual educational policy and 3) to consider the peculiarities of the regional conditions in which the used PLO OEP is implemented.

The fundamental condition for professional and personal self-realisation of teachers in their professional activities is their preparation to perform labour functions (Estermann, Nokkala & Steinel, 2011; Sadler, 2014; Sarantsev, 2015). Graduates were offered a questionnaire designed to meet the requirements for the results of the preparation of a university graduate and the professional standard. Young teachers should assess their preparation to solve professional problems using the scale. 123 university graduates participated in the survey, among which at the time of the survey 41.5% had pedagogical work experience up to a year, 7.3%—from 1 to 3 years and 51.2%—had no work experience. The rank of graduates' answers is presented in Table 1.

Table 1: Self-assessment of graduates' preparation to perform professional tasks (training direction 'Primary Education')

Questionnaire's questions	Rank status in the ranks	New rank
To comply with legal and ethical standards, the requirements of professional ethics	15	1
To form the children's social position of students during their primary school education	2	2
To organise the educational process based on the knowledge of the Federal State educational standards and the content of the approximate basic educational programs	11	3
Objectively assess the progress and opportunities of students through considering the unevenness of the individual mental development of children of primary school age, as well as the peculiarities of the dynamics for development of the educational activities of boys and girls	4	5
To apply the basic and relevant to the modern educational system theory of teaching, education and development of children of primary school age	10	5
To demonstrate possession of educational technologies used in the educational process	12	5
To organise the educational process based on the knowledge used in primary school learning tasks, generalised methods of activity and a system of knowledge about nature, society, human being, and technology	13	7
To form meta subject competencies, ability to learn and universal learning	3	8,5

activities to the level required for mastering the educational programs of basic general education		
To adjust educational activities based on monitoring the educational results, considering the unevenness of the individual mental development of children of primary school age, as well as the peculiarities of the development dynamics of boys and girls	5	8,5
To design and organise the educational process on the basis of the federal state educational standard of primary general education, considering the peculiarities of the social situation of a first grader	1	10,5
To carry out activities to prevent possible difficulties in adapting children to the educational process in primary school	6	10,5
To respond to the direct form of treatment of children to the teacher and recognise their serious personal problems	7	12,5
To cooperate with parents (legal representatives), other pedagogical workers and psychologists, design and adjust the individual educational trajectory of the student in accordance with the objectives of achieving all types of educational results beyond the framework of the primary education program	9	12,5
To set different types of educational tasks (educational and cognitive, educational and practical, educational and gaming) and organise their solution based on the level of cognitive and personal development of young children	8	14,5
To consider the peculiarities of the regional conditions in which the basic educational program of primary general education is implemented	14	14,5

According to the data of the self-examination carried out by graduates, the first ranks were prepared to observe legal, moral and ethical standards, requirements of professional ethics (78% are fully prepared, mostly 17.1% are prepared and 2.4% are partially prepared or not prepared) preparation to form students' social position in younger students (68.3% are fully prepared, 29.3% are mostly prepared and 2.4% are not prepared) and preparation to organise the educational process based on the knowledge of the GEF and the content of exemplary OOPs (56.1% are fully prepared, 31.7% are mostly prepared, 9.8% are partly prepared, and 2.4%are not prepared). Graduates noted that they are worst prepared to consider the particularities of the regional conditions in which the PLO used by the PEP is implemented (41.5% are fully prepared, 36.6% are mostly prepared, 19.5% are partially prepared and 2.4% are not prepared), set different types of educational, practical and gaming tasks and organise their solution in accordance with the level of cognitive and personal development of students (41.5% are fully prepared, 53.7% are mostly prepared, 2.4% are partially prepared % and 2.4% are not prepared). This confirms the results of our previous research on the problems of the development of diagnostic competence of graduates (Danilov et al., 2014). The reliability of the ranking was evaluated according to the following formula:

$$\sum = \frac{(n+1)n}{2} = \frac{(15+1)15}{2} = 120,$$

where n is the number of questionnaire items and $\sum = 120$ is the sum of the question numbers of the questionnaire, which should coincide with the sum of the ranks assigned to each question.

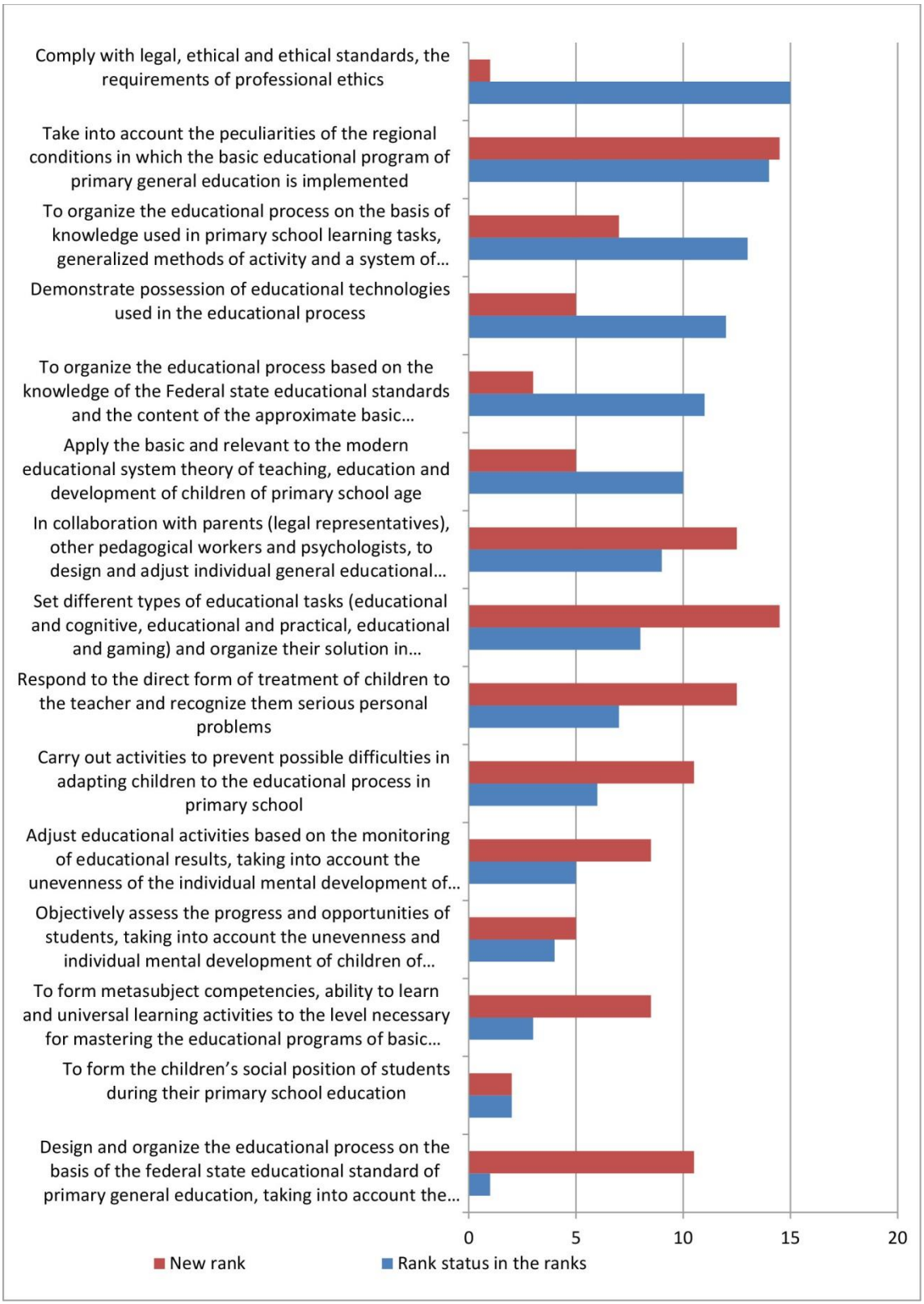

Figure 1. Self-assessment of graduates' course 'Primary education'

Surveys revealed that both graduates and employers identified the same problematic aspects of the training.

The acute need for teachers capable of independent innovative professional activities, solving the problems of inclusive education, introducing effective educational technologies, as well as creating a developing educational environment encourages us to look for a way to satisfy the employers' needs.

The vector of development of pedagogical education has been the preparation of future teachers for solving the professional tasks of inclusive education, the design of individual educational programs and routes besides the introduction of modern educational technologies.

Analysis of the results of graduate questionnaires, surveys of heads of educational institutions, comparison of the requirements of the GEF VO and the professional standard of 'Teacher', and a logical study of the existing problems allowed us making changes and additions to the GEF VO at a new, qualitative level. The existing discrepancies with the professional standard and employers' requests were eliminated; the problems of graduates' preparation to solve professional problems were considered. Therefore, at the second stage of the development of the SES, modelling, the competence model of the graduate was corrected, changes were made to the content of education (curricula and programs) aimed at ensuring the completeness of the training of the future teacher to perform generalised labour functions.

The third stage, reflexive, allowed fulfilling the requirements for the SES and VNI of the HE in the quality management system of education.

The developed independently established standard was the subject of discussion and expertise in graduating departments, meetings of the working group, meetings with heads of educational institutions, and meetings of the Academic Council of the Pedagogical Institute, Scientific and Methodological Council and the Scientific Council of the BelSU National Research University. The discussion process was adjusted in the procedural and activity component of vocational training. The optimal choice of forms, means, methods and technologies for the implementation of the SES, and the organisation of pedagogical practices reflecting new trends in the development of education in Russia has been determined.

A broad discussion of SES at different levels at the reflexive stage contributes to the development of the regional educational space, providing general approaches to the assessment of the quality of teacher training as well as that of the quality of his/her professional activities.

4. Discussion and conclusion

1. Target guidelines for the development of an SES in the direction of preparation for 'Pedagogical education' are the needs and priorities for the development of the regional education system, the realisation of the scientific potential and possibilities of the socio-cultural environment of the university.

2. Studies performed at the diagnostic stage of the development of an SES, allow giving a scientific substantiation of the graduate competence model. Studying employers' needs, graduates' preparation for solving professional tasks, comparing the requirements of the GEF of HE and the Teacher's professional standard for the quality of vocational training make it possible to identify the existing problems of practice-oriented training as well as the ways to overcome them and proceed to the modelling phase of creating an SES.

From the view point of PI Pidkasisty (Cooke, 2002, p. 143), a model is a system of elements allowing reproducing various sides, connections and functions of the object under study. In our case, the modelling of an SES ensures that the teacher is fully prepared to perform generalised labour functions, reflecting new trends in general and vocational education.

3. The reflexive stage is very significant in the design of an SES. High professional responsibility for the quality of the training of the future teacher implies acceptance of an SES in the light of awareness of the results of the diagnostic stage, discussion and timely resolution of existing problems, integration of pedagogical science and practice.

As shown by the results of the investigation of an independently developed educational standard in the 'Primary education' area, teachers prepared based on such a standard significantly differ in higher level of motivation in professional achievements, more pronounced social and professional responsibility, strength and stability of humanistic attitudes, as well as the experience of social and professional communication, a considerably higher level of general and professional culture. The same personal parameters in young specialists are also noted by employers—school leaders, experienced teachers-tutors. In another study Hand and Prain (2002), who implemented a professional development course for in-service teachers, talk about a five-dimensional WTL strategy for successful learning in science Hand and Prain (2002) noted that these five dimensions have a structure that is locked together, and that the writing practices in traditional science classes are based on these elements, but that the writing task is not limited to these dimensions. For this reason, they have mentioned that the dimensions should be enriched with different combinations, and that the teachers should surround these enrichments with a theoretical infrastructure and a pragmatic pedagogical approach (Alkis Kucukaydin, 2018).

Obviously, innovative development of education is possible only based on energy and initiative of young, talented and professionally trained teachers mastered the whole range of professional competencies with internalised a huge amount of knowledge included in the standard of pedagogical education, in the content and technologies of teacher training for school XXI century.

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