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Conceptual Framework for Teachers' Professional Development Design in the Era of Digitalization

Tatiana M. Tregubova* (a), Liutsiia A. Shibankova (b), Alexandra S. Kats (c)

a), (b), (c) Institute of Pedagogy, Psychology and Social Problems, 420039 Kazan (Russia), 12 Isaev street, tmtreg@mail.ru

Abstract

Nowadays the problem of teachers' professional development has become very actual and significant because the need to improve the quality of education and the challenges faced by it, require high professional skills and competences of teaching personnel, their readiness for continuous development and improvement of their qualifications within the framework of the implementation of the Lifelong Learning (LLL) Concept, including pedagogical education. The aim of the article is to identify issues that will allow teachers to enhance their professional skills and achieve professional mastery in the process of teachers' professional development (TPD), which can serve as a resource and mechanism for innovations in the Russian system of higher education. More specifically, the determining factor in the teachers' professional development should become significant changes in the system of teachers' upskilling and retraining, caused by digitalization and resulted in a fundamental transformation of human's development. The methodology of the research includes comprehensive comparative analysis of the phenomenon "teacher's professional development", theoretical analysis of Russian and international literature on the research problem. In the article, the following methods were used: comparative and analytical method, system method, and benchmarking technology of teachers' professional development. The authors made an attempt to reveal the conceptual design of teachers' professional development in some European universities, using the technology of benchmarking of the successful practice of this system abroad, and share characteristics of the European system of the teachers' professional development of (TPD) in the context of Bologna Process. The authors also illustrate the additional factor for enhancing teachers' professional development – analysis of teachers' cognitive styles, which defines choice for appropriate vector and tools for teachers' professional development. The authors recommend the implementation of a benchmarking technology as a method of analyzing good practices and comparing the experience of similar organizations for the purpose of improving the performance of Russian system of teachers' professional development.

Keywords: conceptual framework, teachers' professional development, cognitive style, design, benchmarking, university.

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* Corresponding author. E-mail: tmtreg@mail.ru

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Introduction

Education, being a resource for step-forward development of the society, is a mechanism for transferring and acquiring new knowledge, abilities, professional and social experience, which, in general, is aimed at formation of a behavior model of the civic society members. The highest stage of a post-industrial era and the fourth technological revolution have caused the significant changes in the education systems of countries all over the world. At the same time, a teacher, accumulating social experience, is the possessor of social values and a connection between the past of the society and its perspective future.

Both quality assurance and quality enhancement of education, as well as the success of its reforming and effectiveness are determined, first of all, by the professional activity of the teaching personnel of the educational organization: by those, who do not only know the discipline well, but also regularly update their knowledge in the professional sphere, make the contribution to pedagogical science development, as well as are capable to impart the system of this knowledge.

No doubt, the modern stage of the development of the system of pedagogical education is characterized, first of all, by a rethinking of key values in essential and meaningful characteristics and technologies for improving professional skills and professional retraining of teaching personal. So, the implementation of the cognitive paradigm of higher education implies that innovative models of teachers' professional development should be designed, on the one hand, with taking into account the social order of the system of advanced training, on the other, - to provide the mechanisms of intra-personal motivation of teachers for: professional growth, creation of successful situations not only for students, but also for teachers themselves, for the development of hard- and soft-competences, for improvement of quality and efficiency of pedagogical activity in the conditions/era of digitalization.

Purpose and objectives of the study

Purpose of the study is to investigate, compare and find out examples of best practice on teachers' professional development in the European universities using the technology of benchmarking; to define

factors that impact the system of teachers' professional development and enhance it in the era of digitalization.

Literature review

Among key international vectors of the social and economic development, influencing all spheres of any civic society are new challenges for the education systems: the dominant position is taken by the process of education digitalization and the accelerating technological development.

According to the scientific opinion of Safuanov, Lexmus and Kolganov (2019) and Vezirov (2019), the era of digitalization is characterized by the change of human development models in the sphere of education, transformations of creation processes, keeping and transferring of knowledge, changes in the processes of assessment and making achievements sustainable, transformation of organizational management of the educational organizations. Teachers in the XXI century are facing the challenge of creation the new educational environment, while formation of qualitatively "difficult" human for the complicated world is one of strategic priorities of education. A modern teacher fulfills his (her) professional activity in the conditions of the exponential growth and fast "disintegration" of knowledge, and the need for new values formation on the basis of new technologies demands continuous and systematic professional development.

According to scientific belief of Kozlov et al. (2019) and Shibankova et al. (2019), teachers of higher education institutions are faced with a task to reconsider educational approaches, processes and formats to transfer to students the opportunity to form skills, necessary for personal and professional success and socialization in the XXI century. Setting on development of abilities for constructive use of multidimensional data, information and generation of knowledge by means of human's individual characteristics in the digital world is formed; knowledge priority as well as a value of knowledge and development of students' informative abilities are at the advanced position; transformation of educational process in the digitalization era, defining new roles and functions of the university teacher, presupposes development of teaching personnel skills for successful professional activity in the digital environment.

Regeneration of pedagogical education and improvement of the system of teachers' professional development imply transformations, affecting all stages of formation and development of the teacher: motivation for the profession; professional training in the educational organization that meets modern requirements; employment; teachers' support in the process of career strategies implementation, etc. Crucial changes at all stages of teacher's professional formation and development are aimed at formation of the "pedagogical elite", capable to solve professional problems successfully, to create educational

fruitful environment, to perform professional activity in the conditions of digital transformation of education, which forms new roles and functions of the teacher.

It is worth noting that a modern teacher is a teacher with a new planetary way of thinking. Together education and teaching personnel perform as one of the “key institutions within the conditions for digital economy development” (Digital Economy of the Russian Federation, 2017).

The requirement of a digital education challenge is modern teacher’s understanding of the necessity for free use of innovative realities, such as networking, MOOC, “cloud” technologies, and “Open education”. Today we should talk about the degree of readiness for professional activity in the educational organizations, where “target models of the digital educational environment” are being implemented; “communities of horizontal training” are being formed; “the system of digital trace is being fixed”, and the creation of “an individual learning vector” is developed for each student (Gilmeeva et al., 2019).

The interest of researchers to the problem of cognitive styles as a factor of successful teachers’ professional development, has been influenced by the era of digitalization, and caused by growth of data volume, multidimensionality and complexity of information for the system analysis, and the multi-disciplinary nature of transformational processes in education systems (Tregubova, Kats & Shibankova, 2020; Alekhin et al., 2019).

According to the author's position of Belobol (2007), the research of teachers’ cognitive styles is relevant, because of the following factors:

- research of cognitive styles is multi-disciplinary, being on a joint of psychology of cognition and psychology of the personality, this unique position defines a possibility of the comprehensive analysis of the studied phenomenon;
- understanding, enhancing and forecasting of teachers’ educational activity efficiency becomes possible when issuing features of their cognitive sphere;
- specification of the sphere, character and direction of professional activity of a teacher takes place in accordance with consideration teacher’s individual, psychological features.

According to a scientific position of Russian scientists (Smirnov & Kuzmicheva, 2008; Kholodnaya, 2002), a phenomenon “cognitive style” is understood as an individual and psychological way of perception, analysis and structuring information, realized at all levels of cognition. International researchers (Belobol, 2007; Witkin et al., 1954) are sure that “cognitive style” corresponds with the style of the thinking way. Libin

(1998) believes that the phenomenon “cognitive style” is comparable to individual differences of the personality in intellectual (behavioural) activity, while definition “cognitive” is correlated to cognitive processes of the personality. Some results of the research of cognitive styles are presented in modern psychological and pedagogical literature (Belobol, 2007; Libin, 1998; Smirnov & Kuzmicheva, 2008).

Methodology

The goal of the study is to investigate, compare and find out examples of best practice on teachers’ professional development in the European countries.

The methodology of the research includes comprehensive comparative analysis of the phenomenon “teacher’s professional development”, theoretical analysis of Russian and international literature on the research problem. In the article, a wide range of research methods were used, such as: comparative and analytical method, system method, and benchmarking technology of teachers’ professional development.

The experimental basis of the research was the international consortium of European universities-the partners of the Institute of Pedagogy, Psychology and Social problems (IPPSP, Kazan) within the ERASMUS+ Programme. These universities are the following: University of Bologna (Bologna, Italy), Wageningen University and Research Centre (Netherlands), the Belgrade University (Serbia), the University of Coimbra (Portugal).These universities were the objects of benchmarking project “Best practice of teachers’ professional development in the European universities”, realized in IPPSP in 2019-2020 years.

Results

As a result of cardinal changes in teachers’ professional development models, caused by the era of digitalization, a new form of distance education - MOOC (Massive open online course) rapidly gains its popularity, promoting the appearance of transnational/cross-border models of qualifications and competences, allowing most suitable conditions to obtain education for each person. MOOC appeared as a response to the search of effective, innovative models of education in the digitalization era; as a vector towards overcoming the university closeness, the development of educational cooperation within the international educational space, and increasing the university competitiveness as a response to globalization and educational integration. Learning within MOOC-format suggests an opportunity to get knowledge from the key lecturers and professors around the without academic mobility, and according with the individual educational vector, as a part of lifelong learning strategy.

Development and realization of MOOC allow achieving access to education for everybody, to upgrade the

structure of the educational organization, and to shorten geographical restrictions. However, it is necessary for an educational organization to overcome various barriers and put a lot of effort in order to achieve this task. Any university needs to solve such problems as:

- participation in a global competition at the international and regional markets of educational services;
- keeping balance between educational innovations and traditional constructive pedagogical experience;
- development of pedagogical interaction and cooperation in the educational environment at the regional, state and international levels, etc.

All the above-mentioned positions define requirements for a modern teacher who is performing his (her) professional activity in the digitalization era. At the same time, today they act as the key factors for stimulating the enhancing of the teachers' professional development system in universities.

In accordance with the need for comprehensive analysis of the phenomenon "teachers' professional development", the senior researchers of the Institute of Pedagogy, Psychology and Social Problems (IPPSP), headed by Tregubova, in the process of the experimental work found out some conceptual ideas, which act as conceptual framework for reforming the Russian system of teachers' professional development. Among them:

- the idea of a person-oriented focus of the system of teachers' professional development, revealing the essence of its reform by the fact that each action of the educational activity's actors presupposes pedagogical influence on students' professional development, involving their personal and cognitive components, and directly or indirectly affecting their sphere of concepts;
- the idea of socio-cultural importance of a system of teachers' professional development as an important component in the whole system of professional development, which is based on shared values of globalization and regionalization of education as a social benefit and trend in the process of pedagogical research development;
- the idea of constant innovations' implementation in the system of teacher's professional development, that is aimed at preventing "dissolution" of innovations implementation in the wide range (ocean) of problems;

- the idea of “system openness” of teacher’s professional development” that presupposes openness and availability of information about programs of enhancing professional mastery, international exchange between teaching and research personnel, as well as availability and openness to the international professional contacts which will foster professional networking and various forms of communication;
- the idea of “double advancing” in teachers’ professional development, assuming not only “advancing” step-forward, but also pulling up “lagging behind”, as well as multiple use of innovative technologies in support “advancing” in the conditions of “digital divide”;
- the idea of creation “competitive clusters”; in accordance with the idea, competitive advantages and disadvantages of any given structure (system) can be recognized as those only within a certain cluster. The idea actualizes the problem of criteria indicators definition for determining efficiency of traditional/innovative model for enhancing teachers’ professional mastery. At the same time, within the realization of this idea, it is not necessary for universities to do the same things, for example, to create programs of teachers’ professional development or to develop educational and methodical complexes: instead of it, on the basis of cooperation and partnership, it is possible to exchange the most effective and creative materials, educational content, technologies, and pedagogical personnel;
- the idea of identification and implementation of the best educational practices of the system of teachers’ professional development abroad on the basis of benchmarking technology. Its realization can become an important step and can act as a resource and a vector for enhancing efficiency of reforming Russian system of teachers’ professional development, and also for minimizing risks of making managerial decisions, successfully adopting foreign innovative achievements.

In this research article, we would like to present some results which we received while fulfilling the IPPSP benchmarking - project “Best practice of teachers’ professional development in the European universities” in 2019-2020 years.

Benchmarking in the context of the educational sphere is an innovative technology of the competitive analysis, measurement and comparison of activity results and learning outcomes of the leading educational organizations for the purpose of the best pedagogical practice and productive models of education search with the subsequent successful adoption to the development strategies, which will improve competitiveness and foster an investment attractiveness of the educational organization at the educational service market.

Educational benchmarking possesses a research character as it is a search of certain “standard” - “best of the best” in the professional sphere, as well as development of indicators, criteria, their analysis, comparison, and definition of strategy for achievement of the found ideal (Epper, 1999; Farquhar, 2008; Garlick & Pryor, 2006). And all these factors, as far as it is accepted in the scientific world, are based on the reliable data. The findings from benchmarking enable universities to prioritize resources and use their resources to the best effect.

In our benchmarking project “Best practice of teachers’ professional development in the European universities”, several European universities which were the partners of IPPSP in two international consortiums of the ERASMUS + Program within the Project “HORIZON 2020” were chosen as *the objects of benchmarking*. Among them: University of Bologna (Bologna, Italy), Wageningen University and Research Centre (Netherlands), the Belgrade University (Serbia), the University of Coimbra (Portugal).

In the process of step-by-step realization of the benchmarking project, it has been revealed that today, a modern university needs “new” teachers, able to reconfigure their teaching easily, to find a contact with any groups of students in spite of the level of “digital gap”, possessing an individual cognitive style of a teacher, able to use multimedia technologies (video-lectures, tutorials, interactive platforms) and completely “integrated” into the global net.

In order to be successful and competitive, nowadays educational organizations abroad are organizing teachers’ programs on professional development for the most attractive “fields”. The total system “re-education of educators” is being developed, and it promotes an increase in the human capital of the educational organization. The system of teachers’ professional development is supported by the Centers of teaching mastery, Centers of technical support of education, Centers of Excellence, and Centers of professional development, designed and supported by the universities.

Due to designed benchmarking project, the following characteristics of the European system of the teachers’ professional development (TPD) in the context of the Bologna Process were found out and analyzed:

- polymodelicity and multi-variability of the TPD system;
- diversification of the formats, structures and programmes of the TPD system;
- replacement of traditional model by non-linear (asynchronous) models;
- adoption of personal-oriented development paradigm and use of modular and

competence-based technologies as a new organizational framework for professional development of teachers;

- internationalization of the system of teachers' professional development and adding "European" character to it (orientation to the European values, education of double loyalty of learners, etc.);
- development of social partnership and dialogue between subjects of the process of teachers' professional development;
- strengthening the professional development of teachers, namely, updating the need for quality control and professional certificates and their recognition; closer links with research activities; the increasing need for educational programmes for professional development, etc.;
- expanding sources for grants and scholarships to support teachers' professional development;
- increasing competition in the international and national educational services market to improve the professional skills of teachers.

We have also found out an additional factor, that promotes enhancing of the system of teachers' professional development, and it is the analysis of teachers' cognitive styles that is a prerequisite (of achievement) of teachers' pedagogical mastery and self-realization. Because of the need to choose several leading teachers' cognitive styles, their individual range of cognitive styles is formed. Intellectual behavior and intellectual reactions of a teacher in professional activity can be predicted by means of the analysis of cognitive styles.

Teaching/learning process, teacher's classroom behavior and culture, and successful teacher-students' interaction are influenced greatly by the choice of leading cognitive styles of a modern teacher. Based on the analysis of teachers' cognitive styles, teachers are able to choose, substantiate and improve their tools of teaching. There are many types of cognitive styles and many ways of categorizing these types. In our article, the classification of cognitive style inter-connection is done on the basis of McCarthy's structure (1990): here can be observed four types of (teacher)-learners' cognitive styles: type 1 – innovative learners; type 2 – analytic learners; type 3 – common-sense learners; type 4 – dynamic learners.

Innovative teacher-learners value cooperative knowledge; they need both motivation and reasons for acquiring knowledge. Innovative teachers prefer implementing cooperative learning, brainstorming, and integration of content areas in their teaching. They are in search for the best examples of successful teaching practice in their professional development.

Analytic teacher-learners are interested in facts in order to enlarge their knowledge about basic concepts and processes of teaching. They prefer lectures, independent (individual) research as appropriate forms of work with students. They are capable for analysis of the exact data, doing self-reflexing and getting clear results in the process of their professional development.

Common-sense teacher-learners are interested in the practical way of teaching methods improvement; they prefer hands-on work and kinesthetic experiences as a part of their experimental work with students. In the process of professional development, they are highly motivated to improve their practical teaching skills.

Dynamic teacher-learners are primarily interested in “self-directed discovery”. They enjoy simulations, role plays and games in the process of teaching. They are in a constant search of an appropriate individual vector and explore the most suitable ways of professional development.

Analysis of the teachers’ cognitive styles has its practical value for improving the process of teaching. The detailed analysis of teachers’ cognitive styles should be implemented in the course of e-learning. However, 3 potential pitfalls and problems need to be taken into consideration:

- *students’ audience analysis* implies the comprehensive investigation of students’ learning, digital abilities and skills. The teacher issues the way students comprehend the data, structure and generalize it by means of cognition, after that he (she) is able to make some conclusions about students’ learning styles;
- on the basis of comprehensive analysis of students’ cognitive styles and in order to reveal students’ learning potential, *the terminal objectives* should be focused on their cognitive styles in order to satisfy the needs of “digital generation”;
- after identifying students’ cognitive styles, the teacher should make a choice of cognitive styles which are aligned with the *instructional contents, methods, and aims*. It means a constructive search for materials to teach; optional choice of relevant methods for teaching; innovative decision on forms of appropriate teaching activities; in-depth assessment of teaching techniques.

Summing up, it should be noted that each teacher can find the most comfortable modes for teaching, and the challenge is to adopt one’s teaching mode for each student.

Discussions

The transferring to the information society shows that knowledge, new technologies, a level of education, and abilities to create knowledge are of the greatest value. A modern teacher is facing the need to enlarge knowledge and to transfer it to everyone who wishes to study; at the same time, the format of education does not really matter, only the guarantee – that is the formation of the high-qualified humane capital, that is the future personnel capacity of the country, is meaningful.

It is also possible to claim that the research of teachers' cognitive styles gains a certain importance in the context of reconsideration of key aspects of their professional activity, and a definition of a vector of their development .

We apt to think that *teacher's cognitive style* is a unique way of processing and structuring information, generation of knowledge and its transfer, realized by the teacher within an educational activity. Scientific interest to the problem of issuing cognitive styles in the aspect of teachers' professional development is caused, first of all, by the need to choose a vector of teacher's professional development, taking into account the individual and psychological features of the personality, valuable for professional activity. The teacher should consciously approach the choice of forms, methods and technologies of professional development that will suggest a real assistance in determination of content and direction of his (her) professional activity. Research on teachers' cognitive styles, on the one hand, will allow to issue "standard forms of one's intellectual behavior", and, on the other hand, every teacher has an "individual internal experience of regulatory mechanisms for intellectual activity" (Kholodnaya, 2002). Respectively, individual differences in the process of cognition are essential while determining means for teachers' professional development.

So, on the basis of the analysis of higher school teachers' cognitive styles, it is possible to define and to partially solve the "problem zones" in teaching, put an emphasis on enhancing certain professional characteristics, and lower psychological and pedagogical barriers while teaching students, connected with features of cognition process and challenges of a digital era.

We assume that a teacher who is not doing the analysis of his (her) cognitive styles is not able to plan and realize pedagogical interaction professionally: he (she) poorly carries out a reflection of one's own settings and ways of influence on students, he (she) is insufficiently flexible in various situations of interaction, he (she) does not take into consideration the importance of students' feedback.

Conclusion

To sum up, “completely new requirements to Russian system of higher education and its changed functions imply new approaches to the solution of education problems, while the success of the following actions directly depends on professional mastery and competence of teaching personnel” (Tregubova, 2020). Respectively, the emphasis in teacher’s professional development is placed on achievement of professional mastery by means of improvement of his (her) professional competences and skills, and development of his (her) creative potential.

There is a search for the most effective ways of additional education development and achievement of professional mastery of teaching personnel. The context of goal achievement in the national program “Development of education” (for 2018-2025 years) defines the following strategic directions: online-education development, enhancing the education quality, and ensuring openness and availability of education.

The system of teachers’ professional development which is nowadays being reformed, should react on the modern challenges, and governmental and public initiatives, quickly and in time. These tasks set in the *National Project “Education”*. In this Project and in all documents, concerning its development, it is stressed that the effective system of teachers’ continuous professional development should be based on completely new organizational and content approaches, and on new ideas and concepts.

In the era of digitalization, the increasing role of teachers’ professional development is gaining a global character in an open civic society where innovative experience becomes popular; support for interaction of successful practices, dissemination of initiatives and innovations of teachers and heads of educational organizations, strengthening of the personal-oriented focus of the system of advanced training of teachers of higher education organizations are of great need.

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