



Teachers Professional Competence Assessment Technology in Qualification Improvement Process

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ABSTRACT

Scientific and methodological validity of diagnostic procedures and techniques for the study of teachers' professional competence is designed to ensure the efficiency and dynamism of education management, early detection of possible professional deformations and its correction in the qualification improvement training and in the process of personal and professional self-development. In this regard, this article is focused on the development of technologies to assess the teachers' professional competence in the process of their qualification's improvement process. The leading method in the development of this technology are the analysis of the scientific and methodological literature and practical experience which allow reveal its core elements: The tasks of diagnosis, the entities of diagnosis, a set of procedures based on the principles of system-structured pedagogical diagnostics, means and diagnostic tools. In the article the main components and their qualitative indicators to assess the development of teachers' professional competence in the process of qualification improvement process are proposed. Article submissions are of practical value for managers of teachers' qualification improvement training courses when evaluating their professional competence.

Keywords: Technology, Estimation, Diagnostic Techniques, Qualification Improvement Training, Professional Competence

JEL Classifications: A22, I23, Z39

1. INTRODUCTION

1.1. Background

Deep changes taking place in the field of labor and employment in this country, the need for rapid and adequate response to the changes related to the country's planned transition to an innovative development path, explain a special attention to the education level of the adult population. The need for frequent changes in the type of professional activities not only encourages professionals to obtain new professional knowledge, but also to improve the "academic" education's level. Therefore, there is a problem of models' development based on innovative educational curricula to enhance the experts' educational status who, already possess practical experience but do not have, for whatever reasons, the modern "educational foundation." This problem is becoming more and more ambitious, and its solution requires a broad interpretation of continuous

education's model, which would include not only professional, but also general education component. This of course, will require modernization of legal documents regulating the educational activities of universities and other educational entities dealing with supplementary professional education (SPE) (Semashko, 2003).

1.2. Development Strategy of SPE

Among the most promising strategies for the development of SPE can be described the following ones:

- Predictive strategy, involving parameters' realistic forecast of SPE's system. A good example illustrating the use of this strategy in parameters' assessing of SPE is the assessment of the upcoming reduction in the number of university entrants because of demographic decline, which requires a search for alternative sources of students' retention and sources of budget replenishment. One of such sources could be an SPE system.

- Innovation strategy is realized through the implementation in educational activities of new forms and methods of students' teaching, SPE system's advanced methods of management, the interaction with customers and producing departments. This strategy is an important point, providing innovative development of the educational system of SPE.
- Integrated strategy that can be manifested itself in the consolidation and strengthening of structural units of SPE, diversification of SPE, avoiding of curricula duplication, the inclusion of self-developmental mechanisms in the regional market environment. For example, SPE diversification by integrating of basic and supplementary educational process and the formation of an integrated educational system will eliminate unnecessary duplication of curricula, save resources and ensure the accelerated development of SPE.
- Economic strategy involves full integration of government mechanisms to encourage the system of SPE.
- Strategy of borrowing and adaptation, the sources of which are both the foreign and domestic experience of advanced facilities of SPE.
- Corporate thinking's formation strategy involves the employees' orientation on the values and interests of the organization in which their main professional activities are carried out.
- Marketing strategy involves the creation of necessary conditions for the promotion of supplementary educational curricula in the educational services' market with the help of specific tools: Advertising, public relations – activities, counseling system, and others.
- Survival strategy is aimed at the main resources' preservation of the SPE group potential during sudden emergence of unfavorable operating conditions (changes in the labor market, the consequence of which is the lack of demand for the leading specialties and areas of their training, termination or significant reduction of budgetary financing, leaving of the most qualified specialists in the sphere of economy or in other institutions offering higher wages, the emergence of stronger competitors, and others).
- Optimization strategy involves improving, improvement, modification, renovation, reconstruction of the what is already available.
- Leadership strategy in the price suggests that due to the activities' rational conduct on the basis of the accumulated experience, systematic cost reduction, activities' optimization, etc. consumer is offered cheaper and at the same time not inferior in quality the supplementary educational services.
- Strategy of focusing means attention's concentration on the interests of specific consumers of educational services.
- It should be noted that the dominance of this or that strategy a SPE specific system's development is definitely determined by the specific conditions of the market environment in the region and resource capabilities of the educational system of the university (Bagin, 2005).

1.3. The Importance of Educational Assessment of Teachers' Professional Competence in Qualification Improvement System

The need for pedagogical diagnostics is realized by practicing teachers and managers of all levels in the education system.

But its deployment is related to a number of contradictions, the most urgent of which are: (a) The scientific and methodological one: Between the interdisciplinary nature of the problems in teachers' competence diagnostic and the different levels of their scientific, methodological and technological development (from the certification diagnostics' indicators to the technology of information processing using modern computer equipment). A number of problems in pedagogical professionalism's diagnostics are developed at the level of the latest achievements of modern science, the others are only marked or have unsatisfactory solutions in modern conditions; (b) information and management one, between the need to obtain systematic, accurate, reliable and operational attestation-diagnostic information at all levels of the educational system's management and the availability of such information. The heterogeneity of information's quality collected through a variety of non-standard methods makes it difficult to control the comparability, reliability and validity; (c) management and instrumentation one, between the objective necessity of monitoring the development of pedagogical competence of the various substructures of education and the lack of reliable tools for its collection and processing. A few purely research techniques often without further adaptation are unsuitable for rapid collection and processing of mass diagnostic pedagogical information, because they are not focused on the needs of the certification practice, because there have not been created specifically to address this class of diagnostic problems and are not adapted to the specific conditions and educational institutions' types in which they are applied; (d) organizational and methodical one: Between the need for managers of all parts of the education system in quality attestation and diagnostic information on the one hand, and the level of their professional training to its collection, accumulation and processing on the other hand (In'kov, 2009).

2. LITERATURE REVIEW

The study and theoretical analysis of scientific papers in the field of philosophy, sociology and pedagogy, dissertation research on pedagogy of recent years allowed identify trends, determining teachers qualification improvement system's development and the underlying modern technologies and diagnostic methodologies' developments for assessing the development of their professional competence in the process of qualification improvement training process:

- Formation and development of ideas of professional interaction as a leading one in the qualification improvement training system (Stukanov, 1995; Stukanov, 2003; Tarasov, 1997)
- The continuity of the process of teachers' qualification improvement training (Vershlovsky, 2003; Vorontsova, 1997; Gershunsky, 1998; Nikitin et al., 1999; Podobed and Makhlin, 2000; Stukanov, 2003)
- Changing of professional roles of the teacher in modern education (Vershlovsky, 1990; Dimuhametov, 2006; Piskunova, 2005; Tryapitsyna, 1999)
- The formation of teachers' professional improvement as an open and variable system (Vershlovsky, 1990; Vorontsova, 2001; Nikitin, 2003)
- The organization of the learning process in the qualification improvement training system basing on andragogy principles,

formation of a teacher of qualification improvement training system as an andragogy expert (Vershlovsky, 1990; Vershlovsky, 2003; Gromkova, 2005; Zmeyev, 2007; Kuzmina, 2002; Podobed and Makhlin, 2000; Suhobskaya, 1996).

3. RESULTS

One of the main strategic directions of reforming of modern professional school is to improve the professional and pedagogical training of teachers. The formation of a new generation of professionals with a high level of general professional culture, intellectual development; mobile and competitive to provide scientific, technical and social progress of society depends on their academic qualifications, professional and pedagogical competence.

Development of professional competence of the teacher - A complex, multifaceted process involving all components of educational space of course training within the teachers' qualification improvement.

Measurement and evaluation of the quality of teachers' qualification improvement in the system of supplementary pedagogical education is one of the problems to be studied and discussed.

3.1. Objects of Measuring the Quality of Teachers' Qualification Improvement

The direct objects for measuring the quality of teachers' qualification improvement are:

- A project of the educational process (evaluation of the educational curriculum of courses)
- The process of implementation of the project (evaluation of the educational process on the proposed parameters: Motivation of educational achievements, the novelty of the content of education, the nature of the methods and forms of training, compliance to training of "zone of proximal development," self-organization, the nature of the relationship of entities, personal demand).
- Educational results: Professional competence of teachers; realized educational process by them; educational outcomes of their students. Implemented educational process by them and educational results of their pupils are difficult to measure in the process of teachers' training courses, but it is possible to do in the qualification improvement training system.

The complexity of the assessment of professional competence includes: The criteria description of professional competence; in situational manifestation of professional competence (hence, it can form the basis of an evaluation of deferred education outcomes); in the selection of tools that should describe both the understanding and actions of the entities of qualification improvement process.

3.2. Components of the Technology

The proposed technology of teachers' professional competence assessment in the process of qualification improvement training includes the following set of components and qualimetric indicators:

1. The motivational and valuable component (allow judge the attitude of the teacher to new knowledge assimilation, willingness to learn and professional-personal development)
2. Cognitive-activities component (reflects the level of development of teachers' professional competence, defined at the beginning of their course preparation)
3. Emotionally procedural component (shows the level of course students' satisfaction with the organizational and pedagogical conditions of the learning process, the content of training, relevance of the content and organization of professional courses in general to the needs and interests of the teacher) (Table 1).

At the same time it is important to observe and to take into account the following factors: The increase of knowledge; actualization of knowledge in solving practical tasks; application of knowledge in new situations; the amount of skills, completion of their operational and integrative properties; the structure of professional motivation; dynamics of competencies' development; personal idea of learning, satisfaction with the learning process and its results; readiness degree to implement the acquired knowledge and skills in their post-course educational activities.

The main forms and methods of necessary information's accumulation, in the author's opinion, are profiles - monitors (introspection of their promotions, motivational sphere, professional difficulties, the level of professional competence and others.) and test tasks (level of knowledge of the subject is defined).

Based on the information compiled a general monitoring sheet that allows to present an objective picture of all the indicators is made. Multivariate analysis of the development of teachers' professional competence is reflected in the monitoring map.

4. DISCUSSION

The proposed approach to the professional competence's growth evaluation in teaching training courses is interesting. However, due to the fact that the findings of the advances' level are made on the basis of teachers' self-examination and testing it is believed that these findings are not entirely objective.

In this regard, there is a need to develop indicators and tools that enable the diagnosis of professional competence's level before and after mastering the appropriate educational curriculum in the qualification's improvement training.

In our opinion, the evaluation of diagnostic and training methods' tasks fulfillment aimed at improving and the assessment of professional competence allows obtain reliable, valid and precise results. For certain categories of managers and teachers such a form of diagnosis is recommended, as the creation of a practice-oriented project. Currently, however, this method is used to evaluate the professional competence of the "output." In this connection it is necessary to improve the mechanism of input diagnostics that must be designed to assess all the criteria of professional competence in the same logic as during the output diagnosis.

Table 1: Components of the technology to assess the level of teacher's professional competence

Parameters	Criteria	Indicators
Motivational and-valuable	The teachers' attitude to the mastering of new knowledge, willingness to learn and professional and personal development (mobility)	Personal idea of knowledge obtaining, The structure of the professional motivation; The degree of readiness to implement the acquired knowledge and skills in the post-course educational activities
Cognitive-activities	The teachers' activities performance, the presence of criteria awareness in assessment of these results, abilities to use them in practice	The presence of stable significant results in training and educating of pupils The depth and justification of the analysis of teachers' activities performance. The level of pupils' training The depth, logics and justification of conclusions about the directions of professional activities' improvement The degree of self-criticism of the teacher. The direction of teacher's self-education (narrow professional, broad personal)
	The level of theoretical knowledge and skills in the field of basic science and methodic of subject's teaching, readiness and ability to compliance with their own practice, to improve on their base this practice	Possessing traditional ways of professional tasks' solving Novelty of methodical ways, teacher's being an innovator Knowledge of new literature in the field of the subject and methodic of its teaching, possessing knowledge in the field of methodic history Ability to problem analyze of the information obtained from professional literature Ability to understand the methodic idea and to appreciate it Ability to offer methodic assistance while pupils' difficult situations
	The level of inclusion in innovative solutions and their justification	The quality of presented developments (depth, scientific justification, practical significance, the consequence of the material presented) The level of awareness of the problem (understanding of integration's significance, knowledge of its basic types and directions; problem solving on practical level) The quality of presented samples of ready new practical solutions of urgent problems in teaching (problem choice precision, depth, scientific justification, practical significance of developments)
	The ability professionally and intelligently to analyze not only personal but the experience of colleagues	The quality of colleagues' experience analyses (knowledge of colleagues' experience, ability to learn and compare according to the chosen problem, to allocate the general and specific in their activities, to present convincing arguments)
	Possessing methods of pedagogical research	The level of possession with a set of research skills (understanding, using in practice, justification of judgments) The quality of research program, presented by the teacher: <ul style="list-style-type: none"> • The relevance of the problem put forward; • Scientific justification; • Independence in its development; • Novelty, practical significance
	Possessing of professionally communicational culture, inclusion in other fields of spiritual culture as an indicator of rich personality of the teacher	The variability of interests, speech illiteracy
Emotionally procedural	Satisfaction of students' with organizational and pedagogical conditions of training process, lessons' content, compliance of courses' content and organization in general with the professional needs and interests of the teacher	Satisfaction with the training process and its results

It is difficult to solve the problem of diagnosing to enhance professional competence in the process of teachers' professional skills improvement in system of SPE. Virtually all researchers note that the difficulties of measurement are related to the fact that it remains unclear how to determine the necessary changes, whether they are directly related to a specific exposure during the course preparation.

Researchers believe that the assessment of professional competence is conducted by comparing the results obtained with

some standards, averages, and by comparing with the results of previous diagnose in order to identify the nature of progress in the development and professional growth of teachers and scientific adviser.

5. CONCLUSION

Thus, the proposed technology of teachers' professional competence's assessment in the process of their qualification's

improvement is a dynamic system, core elements of which are: (a) Diagnosis tasks: In-depth analysis of the role and the ratio of allocated components of professional pedagogical competence; (b) diagnosis subjects: Teachers teaching different subjects (as objects and so entities of self-diagnosis), diagnosticians (as the organizers of the diagnosis process); (c) a set of procedures based on the principles of system-structured pedagogical diagnosis correlated with methodologically justified criteria and adequately diagnosing their tools (built in operationalized concepts as multidimensional diagnostic process); (d) means and tools of diagnosis: Methodology of established, basic diagnostics, which are conducted to identify the symptoms of teacher competencies' development maturity; techniques of deep diagnostic that are carried out in case of conflicting data emergency about the personal and professional development of teachers and their core competencies; techniques used in complex level evaluating for development opportunities' prediction and corrective measures' identification; ways to assess the validity and reliability of diagnostic tools. As the main components of the proposed in the article technology of teachers' professional competence's assessment in the process of their qualification's improvement the following components are designated: Motivational-valuable component that allows to judge about the teachers' attitude to new knowledge assimilation, willingness to learning and professional and personal development; cognitive-activities component, which reflects the level of development of teachers' professional competence, defined at the beginning of the course training; and emotional procedural component, showing the level of courses students' satisfaction with organizational and pedagogical conditions of the training process, the lessons' content, with the compliance of the content and organization of training courses in general to professional needs and interests of the teacher.

REFERENCES

- Bagin, V.V. (2005), The strategic priorities of development of the system of supplementary professional education in a regional market environment. *Integration of Education*, 3(40), 3-10.
- Dimuhametov, R.S. (2006), Key ideas of the pedagogical process further training of teachers, educators. *Methodist Scientific Method Journal*, 2, 15-18.
- Gershunsky, B.S. (1998), *Philosophy of Education*. Moscow: SAG, Flint. p432.
- Gromkova, M.T. (2005), *Andragogy Theory and Practice of Adult Education*. Moscow: Unity. p495.
- In'kov, M.E. (2009), *Diagnostics of professional competence of teachers in the context of qualification' improvement (Doctoral Dissertation)*. Rostov-on-Don. p167.
- Kuzmina, N.V. (2002), *Subject Acmeology*. St. Petersburg: Polytechnic. p189.
- Nikitin, E.M. (2003), *Androgogics: History and Modernity*. Moscow: APKiPRO. p125.
- Nikitin, E.M., Palyanov, M.P., Sinenko, V.Y. (1999), *Further training of educators: The state of problems and perspectives*. Tomsk. p236.
- Piskunova, E.V. (2005), *The socio-cultural conditioning of changes in the functions of professional and pedagogical activity of the teacher (Doctoral Dissertation)*. St. Petersburg. p337.
- Podobed, V.I., Makhlin, M.D. (2000), *Systemic problems of formation of adult education: Educational services, features, technology training*. St. Petersburg: Job RAO. p120.
- Semashko, I.M. (2003), *Gender stereotypes in the past and the present text*. Moscow: IEN RAS. p272.
- Stukanov, A.P. (1995), *Organizational-pedagogical conditions of optimal control of continuous professional development of teaching staff at the municipal and regional level (Unpublished Master's Thesis)*. Maykop. p21.
- Stukanov, A.P. (2003), *Synergistic control continuous professional development of teaching staff (Doctoral Dissertation)*. Moscow. p247.
- Suhobskaya, G.S. (1996), *Personality. Inner Peace and Self-Realization: Ideas, Concepts, Attitudes*. St. Petersburg: Tuscarora. p175.
- Tarasov, V.V. (1997), *Regional System of Teacher Education Teacher: Theoretical Approaches, Experiences and Perspectives of Development*. Penza. p137.
- Tryapitsyna, A.P. (1999), *Theoretical and methodological problems of continuous pedagogical education. Actual Problems of Continuous Pedagogical Education. I*. St. Petersburg: Education. p8-13.
- Vershlovsky, S.G. (1990), *Education as a Value*. Moscow: Education. p118-128.
- Vershlovsky, S.G. (2003), *Theoretical and methodological problems of studying the educational environment. Proceedings of the Conference on Problems of the Organization Developing Environment in Post-Graduate Education*. St. Petersburg: SPbGUMP. p14-18.
- Vershlovsky, S.G. (2003), *Adult as an entity of education*. *Pedagogy*, 8, 3-9.
- Vorontsova, V.G. (1997), *Humanities and axiological foundations of post-graduate education teacher*. Pskov: Pskov University POIPKRO. p421.
- Vorontsova, V.G. (2001), *Educational environment as the factor of development of the personality. Proceedings of the Conference on Problems of the Organization Developing Environment in Post-Graduate Education*. St. Petersburg: SPGUMP. p9-13.
- Zmeyev, S.I. (2007), *Andragogy: Foundations of the Theory, History and Technology of Adult Education*. Moscow: PER SE. p272.