

## A Structural and Functional Model of Teachers' Monitoring Skills Development

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### ABSTRACT

The relevance of the present issue is caused by a strong need to conduct monitoring processes in all types of teaching processes and a poor development of theoretical, content and technological, scientific and methodological material for teachers' monitoring skills development during their teaching practice. The aim of the article is to create and test a structural and functional model of teachers' monitoring skills development based on a systematical activity-oriented approach. Modelling is the main method in the research as it helps to consider the present problem as a process of a directed and conscious acquisition of monitoring skills by teachers trained. The article presents a fully elaborated structural and functional model of teachers' monitoring skills development which consists of interconnected motivational and aim-oriented, content and procedural, result-oriented and estimation components. The model adapts teachers to new conditions of modern education and encourages for further high quality education monitoring process.

### KEYWORDS

Structural and functional model, education quality monitoring, monitoring, monitoring skills

### ARTICLE HISTORY

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### Introduction

During the last decade experts appropriate professional training and continuous enhancement of professional educational skills corresponding with current economical, social and personal aspects are considered to be the most important components of a modern system of education. Social and cultural factors affecting the system of education and the role of it in the modern society caused new requirements which a teacher must meet and new approaches which should be taken into account creating professional education programs; these approaches

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make such program more flexible and easy-to-use (Tryapitzyna, 2006). We suppose that new economy and production type should cause some changes in the system of education. To be more exact, we consider that the system should be flexible and without linear forms of teaching processes; all types of pedagogical activity should involve new knowledge and its enrichment; the system of education should be based on a personal creativity and proactiveness as significant tools of a systems' development; the system should endure multiple and unpredictable changes in educational technologies in short periods of time. In order to achieve these results, we have to create an effective system for educational quality management which includes measures for educational monitoring (Potashnik, 2006).

To control education activity effectively, we have to trace the quality of studies, their results and conditions necessary for this process constantly. Educational monitoring skills are formed at universities and enhanced after graduation; they should be reflected in adequately implemented content forms of professional activity (Bolotin & Sorokin, 2009). It is obvious that in the modern education system a new type of a teacher is formed who does not only teach but does researches, consults on many issues, manages teaching and self-development processes, quickly adapts to the changes and ready for new subjective conditions. Tasks and content of a modern teaching process change. A teacher's work includes different types of pedagogical activity which correspond to new standards of education. Such activities are pedagogical modelling, pedagogical design, pedagogical management, pedagogical monitoring, etc.

Present educational conditions should be theoretically revised to have special pedagogical conditions revealed; such conditions could encourage teachers to form their monitoring skills during their professional training and practice (Atanasyan, 2009). But pedagogical activity analysis shows that only few of teachers can monitor results of a teaching process, define factors and means for effective studies, evaluate their effectiveness, reveal problems and difficulties and correct them properly.

In order to provide a high quality of education, one of the main requirements in a teacher's work is to conduct an educational quality monitoring process. However, federal state standards of higher pedagogical education require development of general skills (scientific and methodic, designing, experimental, research-aimed, etc.) without any separate monitoring skills concretized and distinguished.

### **Literature Review**

O.A. Abdulina (1998) and A.V. Usova (1987) paid much attention in their works to a teacher's general pedagogical skills development. V.A. Kalney & S.E. Shishov (1999) and others studied the essence and structure of a pedagogical monitoring, its main functions and implementation steps, a modern set of diagnostic tools for an educational process control, conditions for enhancement, possible information technology tools used in a monitoring process, classification of a modern monitoring process based on various criteria. A.N. Mayorov (1998) in his work studied a monitoring typology with a hierarchy of management systems.

### ***Teachers' Levels of Computer Use in Classrooms and Professional Development Programs***

Professional development after universities is a complex multiple process combining separate but interconnected



training programs for teachers' qualification enhancement. Practical pedagogical activity plays a significant role in this process. We can consider further enhancement of the following expertise as a distinctive feature of a post-university education: special training (aimed at a subject acquisition); psychological and pedagogical training (it is commonly realized according to a personal practical experience with a strong emphasis on means of self-identification and self-development); social and cultural training (aimed at an integral reality and pedagogical reality perception). These components as well as a teacher's self-reflection create special conditions for a teacher's experience enrichment. Methodical materials of an educational establishment give a teacher an opportunity not only train personal skills, but also provides with theoretical knowledge and allows testing unique solutions for teaching process enhancement.

The analysis of the mentioned resources and conducted experimental work let us conclude that there is a lack of due attention to teacher's monitoring skills development during professional training in pedagogical universities. The majority of teachers estimate quality of education by pupils' educational achievements. But the theoretical analysis of educational establishments activity enhancing professional expertise proved that teachers can conduct education quality monitoring provided there is an appropriate methodic support service.

### ***Aim of the Study***

The aim of this study was to design a model for teacher's monitoring skills development, reveal and prove a set of effective pedagogical conditions for teachers' monitoring skills development; conduct experimental work.

### ***Research questions***

The overarching research question of this study was as follows:

What are the set of effective pedagogical conditions for teachers' monitoring skills development?

### ***Methods***

The following methods were used during the research: theoretical (analysis, synthesis, concretization, generalization, methods of analogies, modelling); diagnostic (questionnaire, interview, testing, tasks); empiric (studies of other educational establishment experience, analysis of their regulation documents, pedagogical experiment); experimental (stating, forming and control experiments); mathematical statistics method and method of results graphic representation.

Research experimental facilities:

Experiments were conducted in the Federal State Budgetary Educational Establishment of Higher Education Bashkir State University of M. Akmullah.

The research was conducted in three stages:

At the first stage we analyzed theoretical and methodological approaches in philosophical, psychological and pedagogical science, in dissertations on this issue and considered theories and methods of pedagogical researches; we formulated a problem of the research, its aim, methods and an experimental plan.

At the second stage we designed a model for teacher's monitoring skills development, revealed and proved a set of effective pedagogical conditions for

teachers' monitoring skills development; conducted experimental work, analyzed, checked and detailed the results obtained during the research.

At the third stage we finished the experimental work, detailed theoretical and practical results, generalized and systematized the results.

## Results and Discussions

Professional development after universities is a complex multiple process combining separate but interconnected training programs for teachers' qualification enhancement. Practical pedagogical activity plays a significant role in this process. We can consider further enhancement of the following expertise as a distinctive feature of a post-university education: special training (aimed at a subject acquisition); psychological and pedagogical training (it is commonly realized according to a personal practical experience with a strong emphasis on means of self-identification and self-development); social and cultural training (aimed at an integral reality and pedagogical reality perception). These components as well as a teacher's self-reflection create special conditions for a teacher's experience enrichment. Methodical materials of an educational establishment give a teacher an opportunity not only train personal skills, but also provides with theoretical knowledge and allows testing unique solutions for teaching process enhancement.

The analysis of the mentioned resources and conducted experimental work let us conclude that there is a lack of due attention to teacher's monitoring skills development during professional training in pedagogical universities. The majority of teachers estimate quality of education by pupils' educational achievements. But the theoretical analysis of educational establishments activity enhancing professional expertise proved that teachers can conduct education quality monitoring provided there is an appropriate methodic support service.

On the basis of a systematical and activity approach we created a structural and functional model of teachers' monitoring skills development. It includes the following structural components: motivation-aimed, content and procedural component, result and estimation component. The motivation-aimed component of the model forms motivation-aimed and personal attitude to monitoring skills acquisition, helps teachers to understand significance of educational quality monitoring so that they feel a strong professional duty to make a monitoring process an indelible part of their professional activity. A content and procedural component of the model provides teachers with psychological and pedagogical knowledge and helps them to acquire monitoring skills gradually. A result and estimation component helps to analyze results, correct them, assess formed monitoring skills according to appropriate criteria and parameters. These model components form a process of teachers' organized monitoring skills development. The result of the implemented model is a certain level of a teacher's monitoring skills development (Illustration 1).

The presented model is the main component of a teacher's monitoring skills development in the current educational practice. Implementation of this model is very relevant in present system of education constantly modernized.

The following pedagogical conditions contribute to a teacher's monitoring skills development: teacher's involvement into interaction with pupils in order to create personal educational paths during methodological work (Barinova & Karunas, 2015); a step-by-step monitoring realization during studies of a particular subject, when a teacher and a pupil develop monitoring skills together helping each other.



During the interaction process a teacher specializing in teaching methods (or a representative of a methodic support service) and other teachers change their roles: a teacher (or a representative of a methodic support service) specializing in teaching methods whose task is to initiate other teachers' activity is less active than other teachers.

A teacher specializing in teaching methods (or a representative of a methodic support service) does not act as a filter absorbing information but plays a role of an assistant. Interaction as an educational process is widely used in intensive teaching. Methods of interactive education contribute to pupil's involvement into interaction, active information acquisition and processing.

Teachers involved into interaction gain more self-confidence; this process helps them to admit their colleagues' abilities, develops an ability to listen to a partner, teaches them to be patient, confident in personal way of self-expression, boosts their self-esteem in the process of skills development, gives them an opportunity to train their concentration on the task and make certain decision based on monitoring results.

When teachers interact with each other and other representatives of methodological support, they create new individual educational routes to acquire monitoring skills effectively.

Various opportunities of pedagogical activity and enhancement of a teaching process are available only through an objective feedback gained when all the types of activities are well-organized in structure and all subjects of a teaching process are aimed at certain results and express solutions for problems. To realize this approach, we have to work out a step-by-step process of a teaching subject monitoring on a subject level.

If information about a teaching process is received in due time, we can correct this process in a very short time to eliminate some errors and deviations. Thus, a step-by-step monitoring process allows us to interfere in a system, regularities of a teaching process or a personal development (Barinova & Karimova, 2014).

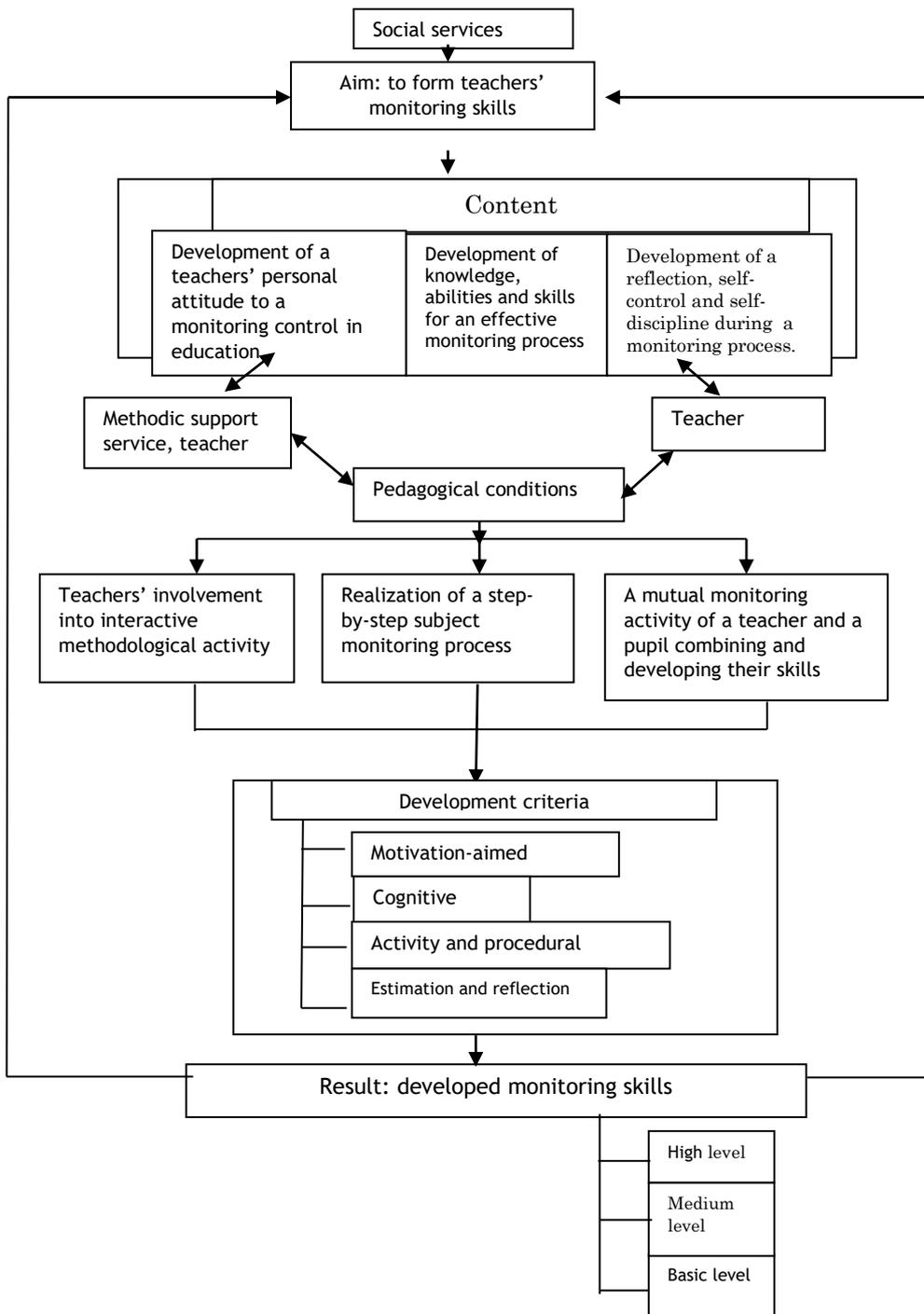
One of the conditions of a teaching process monitoring on a subject level is pupils' organized individual work. A regular and well-organized control and estimation play a significant role in active pupils' individual education. A teacher's regular control and estimation during monitoring processes also plays an important role for pupil's adequate self-esteem development.

Pupils' involvement into an estimation activity forms their critical thinking to their results and helps them to realize their opportunities and correlate a teacher's estimation and their self-esteem.

In its turn an adequate pupil's self-esteem provides strict requirements to teacher's estimation process.

If a pupil is able to estimate personal achievements, this shows that a teacher's activity was very effective. If a pupil estimates personal success inadequately, then a teacher is likely to have made a mistake during a teaching process. A teacher should analyze a teaching process and find drawbacks which could cause an inadequate pupil's self-esteem.

Thus, during a step-by-step teaching process monitoring on a subject level a teacher and a pupil are involved into a monitoring process. This process can provide development of teachers' and pupils' monitoring skills which form an adequate self-esteem with the help of self-analysis.



**Figure 1.** A structural and functional model of education quality monitoring skills development among teachers

Stages of model implementation:



Implementation of the model was carried out in the following stages of experimental work:

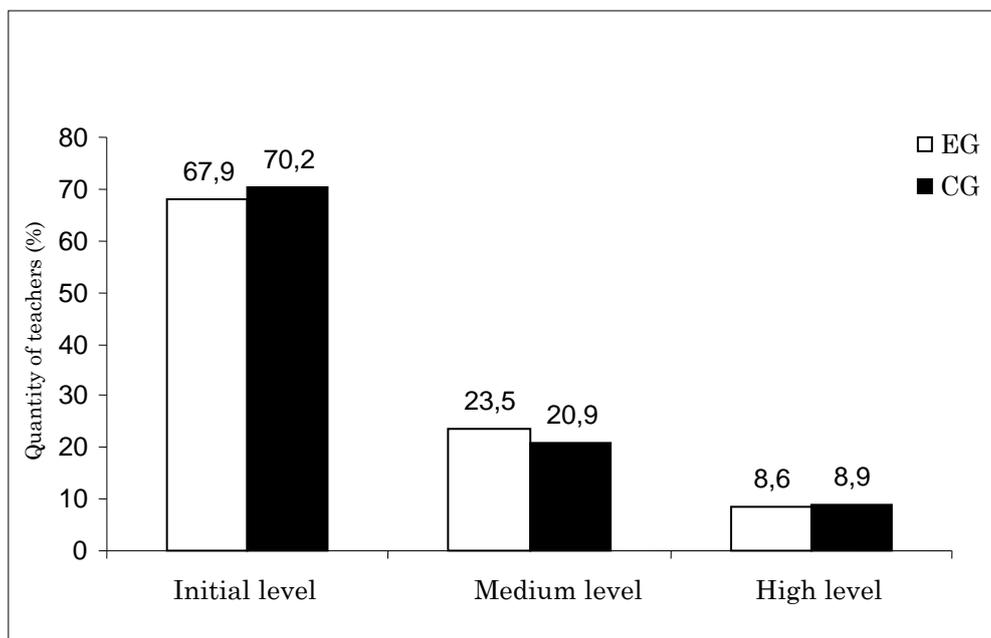
Defining the level of teachers' monitoring skills development at the initial level with help of the following methods: testing, questionnaire, pedagogical observation and teacher's self-observation, statistic processing of results;

Creating and implementation of scientific and methodological materials which contribute to a successful structural and functional implementation of the teachers' monitoring skills development model;

Analysis of teachers' monitoring skills development dynamics.

Stating stage:

157 teachers were involved into the experiment, 83 of them were direct participants. Analysis of the diagnostic data allowed to conclude that the majority of the teachers had an initial (68.7%) and a medium (22.3%) levels of developed monitoring skills (Figure 2).



**Figure 2.** Results of teachers' monitoring skills development at the stating stage of the experiment

Low results obtained according to a motivation-oriented criterion reflected in a lack of motivation for education quality enhancement and in misunderstanding of monitoring aims and tasks, its significance; teachers did not realize the necessity to apply the monitoring results in their professional activity. The initial level of monitoring skills development according to an operational and procedure criterion reflected in random monitoring skills. The teachers were not able to conduct monitoring processes, they could not create an educational quality monitoring program, define criteria and estimation parameters or a set of diagnostic tools, analyze and process information concerning education quality, forecast tendencies in education quality changes, estimate results of cooperation work and plan further step for aim setting, content, methods and activity forms selection. Low results

according to a reflection criterion were caused by inability to use personal experience and act on the basis of analysis of social phenomena and events.

During the educational process analysis we revealed some drawbacks in cooperation of the methodological support with the teachers aimed at monitoring skills development. These drawbacks were connected with passive types of work which limit teachers in creating their own educational paths. The teachers did not correlate their results with a quality and necessary conditions of a teaching process. Pupils' activity is often estimated from a subjective point of view and does not coincide with pupils' self-estimation. Teachers often estimate pupils according to their direct achievements during studies and do not pay enough attention to pupils' subjective result expressed in a pupil's attitude to the results, pupil's personal satisfaction and psychological value (amount of efforts applied, balance of pupil's abilities and results, correlation of pupil's abilities and efforts applied in a particular case).

#### Forming stage:

Realization of pedagogical conditions during the forming experiment and methodological work demanded teachers' involvement into interaction with other teachers and a methodic support service to create personal educational paths. Each teacher chose personal educational route of a certain specific aim (adaptive, developing or a creative type of a route) on the basis of a step-by-step algorithm realization (Gayazov, 2003) according to a level of monitoring skills development. Specialists of the methodic support service studied teachers' educational needs, diagnosed levels and grades of their personal skills development necessary for monitoring procedures. Methodological support specialists with teachers also estimated resource opportunities of educational establishments, defined basic educational objects for their further studies; formed a teacher's personal attitude to monitoring material acquisition; concretized aims of teacher's educational path; each educational path was constantly enriched with a new content and a set of technological tools; the most appropriate educational paths were implemented; each of the paths was diagnosed from time to time; reflection and self-estimation were also conducted during this stage.

Together with the methodological support service we created and tested the teachers' educational program called 'Education quality monitoring'. Teachers were involved into its implementation and participated in projects, artistic events, conferences, seminars, idea 'fairs', seminars concerning problems solutions, business and role plays, discussions on issues concerning education quality enhancement, trainings. The teachers not only enriched their knowledge, but exchanged thoughts and values, improved their skills with the help of reflection, experience, comprehension of the material provided concerning education quality enhancement. During the educational program implementation we had to create the conditions of benevolence and mutual support, as they encouraged teachers to develop their cognitive activity transforming them into higher levels of cooperation.

A directed process of teachers' monitoring skills development in the experimental group was conducted through realization of a step-by-step monitoring process during particular studies where a joint work of a teacher and a pupil developed their monitoring skills. The step-by-step monitoring process included diagnostics, analysis of these steps realization in a teaching process and correction of all components of a teaching process in due time. Pedagogical activity helped to realize each stage of monitoring properly, which was traced, diagnosed, forecasted



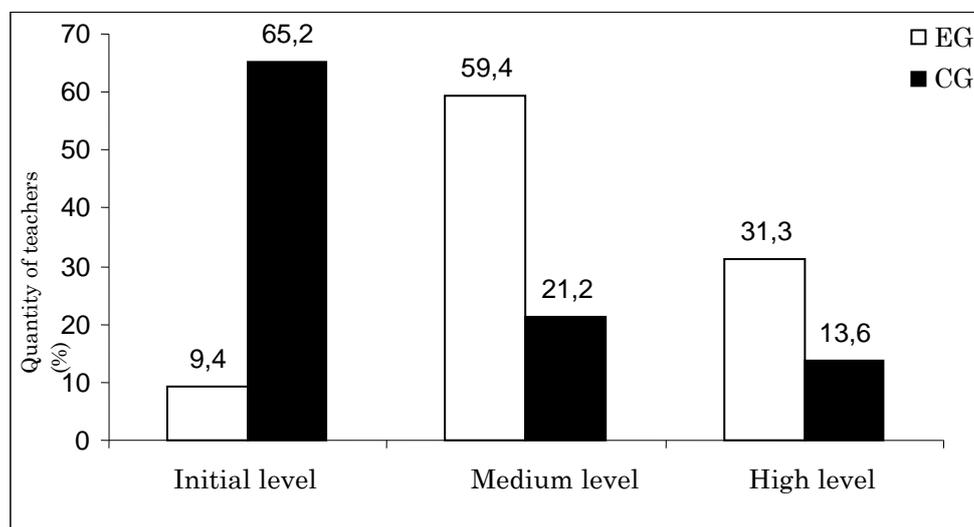
and corrected in due time. Information concerning each stage of a teaching process obtained in proper time allowed a teacher to analyze how tasks given in each stage correlate with main aims of studies and to check if they can be used to assess knowledge and skills taking into consideration their exercising on reproductive and reproductive levels. In case of any deviations we corrected the situation promptly. A high quality of education was possible due to abilities to design a system of monitoring processes in a teaching process, to define the role of each lesson in a whole system subordinate to educational aims and tasks, to organize effective interaction with pupils provided.

Monitoring activity can be successfully formed if all the participants are involved into a teaching process.

During the analysis and evaluation of the fulfilled work both a teacher and a pupil discussed difficulties, characterized studying activity content results thoroughly, analyzed advantages and drawbacks of the work. These measures helped a teacher to correlate a personal estimation of pupils' achievements with pupils' self-estimation and correct it in due time.

Control stage:

At this stage we conducted diagnostics in the same subjects as in the stating stage to define a level and dynamics of teachers' monitoring skills development. The data of the control diagnostics showed changes in parameters comparing with the parameters of the stating stage. But these changes were significant only in the experimental group, because the proportion of levels in this group changed to better: the percentage of those with a medium level is 59.4%; the percentage of the teachers with a high level is 31.3%. We did not obtain such significant results in the control group. These results showed that the teachers in the control group did not develop their monitoring skills.



**Figure 3.** Results of teachers' monitoring skills development at the control stage of the experiment

The changes which happened during our experimental work allowed us to trace general dynamics of teachers' monitoring abilities development (Figure 3). Forming influence caused significant changes according to a motivation-oriented, cognitive, operational and procedure criteria of monitoring skills development. It was expressed in a high level of motivation among teachers; they acquired a conscious attitude to monitoring skills development, were eager to learn more about them; teachers' attitude to values and aims of monitoring activity as an educational and social significant component changed; they needed to design their pedagogical activity including monitoring procedures. Changes in cognitive sphere reflected in systematization of education quality knowledge and pedagogical knowledge. The teachers themselves stated that monitoring skills were absolutely necessary. The majority of the teachers planned their monitoring activity properly in their practice, created and adapted a set of diagnostic tools, collected data and analyzed them, characterized levels of monitoring skills development, compared results with standard parameters, formulated a pedagogical diagnosis.

Comparing results with the results of the stating stage of the experiment we revealed changes according to all criteria comparing results with the results of the stating stage at the control stage. But these changes were significant only in the experimental group, because the proportion of levels in this group changed to better. We did not obtain such significant results in the control group.

### **Conclusion**

We found out that teachers' monitoring skills development can be carried out successfully during the professional practice if a teacher's pedagogical activity is organized as a directed conscious process when specialists train education quality monitoring skills on the basis of the developed structural and functional model. This model includes interconnected motivation-aimed, content and procedural, result-aimed components.

### **Implications and Recommendations**

The materials of the articles will be useful for teachers willing to adapt to new conditions in the modern system of education and for specialists planning an education quality monitoring activity.

During the research we revealed new problems and issues to be considered in future. It is quite necessary to continue findings in monitoring skills development methods and work out solutions for the training of management staff of professional educational establishments so that they could conduct monitoring activity in the system of advanced professional training.

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### **Disclosure statement**

No potential conflict of interest was reported by the authors.

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