Improving the Efficiency of University Management: Teacher's Performance Monitoring as a Tool to Promote the Quality of Education

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Abstract:

This study aims to examine the essence of education monitoring, its place in the higher education management system and the practical implementation of teacher's performance monitoring as a tool to promote the quality of education.

The article considers theoretical aspects of monitoring as a tool to promote the quality of education, assesses the performance of the university departments, research and teaching staff and discusses the results and suggestions on how to improve monitoring activities in higher education.

Based on their research and findings, the authors claimed that the monitoring of the performance of the university research and teaching staff on the base of an indicator system in terms of education, methodology, research, organization and counselling services would lead to valid conclusions as to the effective performance of both individual researchers and teachers and university departments, in general.

Keywords: Quality of education services, university teacher's performance, monitoring, monitoring assessment, monitoring scorecard.

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1. Introduction

Socio-economic and cultural globalization and the growth of information place greater demands on education, which is the basis of the individual's intellectual, spiritual and creative potential and a major factor in the society.

The quality of higher education services depends, above all, on full and reliable information about teaching activities, internal and external evaluation mechanisms of student's performance and teacher's qualifications and activities. According to Hall (2013), system monitoring is an invaluable tool to obtain this kind of information, as it involves a multiaspect examination of influencing factors and results of high quality student training, one of which is the professionalism of research and teaching staff.

Many Russian researchers, including O.A. Grishina, O.V. Saginova and I.I. Skorobogatykh, believe that present-day Russia lacks a centralized higher education monitoring system governed by relative legislation or other normative instruments. Implementing such a system nationwide, however, seems necessary, considering that it should provide a unique information base for ensuring higher education quality management. Among the primary tasks facing Russian higher education are the ones that emphasize the need for implementing new management mechanisms for developing and improving the quality of education, based on a scholarly approach to analyze problems and using reliable statistical information by means of educational monitoring (Grishina *et al.,* 2015). Pedagogical literature and educational practice give diverse interpretations of the contents of higher education monitoring as shown in Table 1.

Table 1. *Diverse interpretations of the contents of higher education monitoring in pedagogical literature and educational practice*

No.		
1	O.N. Vikhareva, I.V. Sokolnik (2013, p. 250)	A system of organizing, collecting, storing, processing and searching for information on student activities and, in general, on higher education institutions, which ensures ongoing tracking of their current condition and provides the opportunity to predict future trends, to determine and evaluate university rankings by indicator-based assessments of their educational services.
2	K. Tan, S. Kek (2014, p. 22)	Supplementary control and ongoing adjustments of teacher/student interactions in the organization and implementation of the teaching and educational process.
3	Tiziana Laureti, Luca Secondi, Luigi Biggeri (2014, p. 152)	A constantly updated and renewed information system for monitoring the status and trends of higher education based on a set of benchmarks with a view to propose management solutions for correcting undesirable disproportions by analyzing the information gathered and by predicting the further development of the given educational level and specific processes under investigation.

4	E.G. Nadezhkin (2010, p. 140)	A comprehensive management tool to gather, store, process and disseminate information about the quality of higher educational systems in order to predict their future trends.

The present study aims to test a system for monitoring the innovation performance outcomes of university departments, research and teaching staff. The research hypothesis is as follows: given that the university teacher's professional activities are centered around various areas, including education, methodology, research, organization and counselling services, the monitoring of the performance of the university research and teaching staff on the base of an indicator system in terms of education, methodology, research, organization and counselling services will lead to valid conclusions as to the effective professional performance of both individual researchers and teachers and university departments. The research findings provided below confirm the research hypothesis.

2. Methodology

The study was conducted in the following departments in the Physics and Technology Faculty of the University: Engineering Graphics and Design (EGD), Physics, Material Science and New Material Technology (MSNMT), Machinery and Device Production (MDP), Chemistry, Mechanisms and Machine Design (MMD).

Assessments based on monitoring information are a scorecard showing the performance of the department and of the researcher/teacher in specific innovation activities that improve the quality of higher education services. Monitoring the professional performance of central participants in the educational process is an integral part of the implementation of the monitoring system to assess the quality of higher education. All researchers and teachers working on the department (full and associate professors, senior lecturers and teaching assistants), with an exception of external part-timers, participate in the monitoring process.

Research and teaching performance monitoring is based on the information provided by each staff member for each indicator on the Individual Monitoring Form (Table 2). The integral research and teaching performance monitoring (M_{rts}) refers to the overall number of points earned by the staff member in terms of his professional activities during the academic year under review:

$M_{rts} = M_{rof} + M_{lo} + M_{org} + M_{ca}$
where M_{rof} is the assessment of research outcomes and findings;
M_{to} is the assessment of teaching outcomes;
M_{org} is the assessment of the outcomes of organizational activities;
M_{ca} is the assessment of the outcomes of counselling activities.

Teacher's performance monitoring for each indicator is calculated by multiplying the weighted value of each indicator score (P) by the quantitative variable of the corresponding indicator (Q), as shown in Column 5 (Table 2).

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Table 2. *Individual Monitoring Form*

Types of professional innovation activities	Assistant	Senior Lecturer	Associate Professor	Full Professor	Weighted value of indicator scores (P)☐	Assessment (M) by the formula P x Q, scores
	Number by indicator (Q)					
1	2				3	5
1. RESEARCH WORK						
1.1. Development and management of international and Russian research projects	▓	▓			100	
1.2. Participation in international research projects, confirmed by relevant agreements					30	
1.3. Participation in research projects in cooperation with Russian research and educational institutions, confirmed by relevant agreements and other documents					20	
1.4. Editing academic journal(s) in the University's areas of specialization, which are included in the list of academic journals approved by the Russian Academy of Sciences:	▓	▓	▓	x	x	x
— editor-in-chief	▓	▓	▓		50	
— deputy editor-in-chief	▓	▓	▓		30	
— member of the editorial board	▓	▓	▓		10	
— executive secretary	▓	▓	▓		30	
1.5. Monography writing (please indicate the number of printed pages):	▓	x	x	x	x	x
— author	▓				80 per 1 printed page	
— team of authors	▓				40 per 1 printed page	
1.6. Writing monographies as part of international teams of authors	▓				60	
1.7. Publications in Russian academic journals	▓				70	
1.8. Publications in international academic journals:	x	x	x	x	x	x
— that are part of international academic databases written in a foreign language					100	

— that are part of international academic databases written in Russian					80	
— that are part of other international academic databases					40	
1.9. Participation in Russian academic conferences, included in the relevant conference program					80	
1.10. Participation in international academic conferences, included in the relevant conference program					100	
1.11. Training of teaching personnel within the established timetable:	▓	x	x	x	x	x
— training of PhDs from among PhD candidates	▓	▓	▓		500	
— training of PhDs from among graduate students	▓	▓			250	
— review of the thesis of teachers completing their graduate studies in the University	▓				20	
1.13. Participation in specialized academic boards	▓	▓			20 per 1 session	
1.14. Reception of Russian and international awards in education and science	▓				1000	
					M rof	
2. TEACHING WORK						
2.1. Coursework writing (please indicate the number of printed pages):	x	x	x	x	x	x
— textbooks					10 per 1 printed page	
— learning aids, study guides, case studies					8 per 1 printed page	
— other learning tools					5 per 1 printed page	
2.2. Preparation and implementation of curricula and study materials:	x	x	x	x	x	x
— development	▓				100	
— implementation and annual updating	▓				50	
2.3. Writing textbooks or study guide as part of international teams of authors (please indicate the number of printed pages)	▓				20 per 1 printed page	
2.4. Teaching courses in foreign universities	▓				100 per 1 course	
2.5. Development and implementation	x	x	x	x	x	x

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of innovative education ideas, including:					
— new creative courses and lectures	▓				200 per 1 course	
— new curricula aimed at using various interactive and information technologies	▓	▓			50	
— modern teaching methods using state-of-the-art educational technologies	▓				40	
2.6. Winning top places in international and all-Russian student competitions:	▓	x	x	x	x	x
Nationwide competitions	▓	x	x	x	x	x
— first place	▓				200	
— top places	▓				100	
International competitions	▓	x	x	x	x	x
— victory	▓				500	
— top places	▓				300	
2.7. Use of modern educational IT technologies in class (multimedia materials and presentations, online consultations, other modern educational IT technologies)					10	
2.8. Student research projects (projects by discipline; creative projects aimed at improving students' entrepreneurial skills)					20	
2.9. Development of distance education courses and learning materials	▓				100	
					M_{to}	
3. ORGANIZATIONAL ACTIVITIES						
3.1. Grant applications:	x	x	x	x	x	x
— international research grants for the University / a group of researchers					500	
— international research grants for the University (individual)					200	
— Russian grants					100	
3.2. Organization of academic or methodological conferences					300	
3.3. Organization and conduct of university-based student competitions or academic work contest					300	
3.4. Organization and holding of business forums	▓				80	
					M_{org}	
4. COUNSELLING ACTIVITIES						
4.1. Providing advice on projects and grants to external clients (when there is an agreement with the University)					30	
4.2. Participating in Russian and	▓				50	

international research projects funded from different sources						
4.3. Development and implementation of joint training programs in collaboration with employers and other customers					40	
4.4. Establishing and maintaining regular contact with competitive and innovation-oriented enterprises					40	
4.5. Joint work with business representatives on developing key competences for prospective specialists currently enrolled the University's priority programs					50	
4.6. Commercialization of research output					100 to 500	
4.7. Earning intellectual property rights:	x	x	x	x	x	x
— copyright certificate					50	
— patent					250	
					M $_{ca}$	
COMPREHENSIVE MONITORING OF THE TEACHING STAFF MEMBER'S PERFORMANCE M $_{rts}$						

Note: The teacher should fill out Column 2 in the part corresponding to his or her position and only for entries that are not painted black. The weighted value of indicator scores will be specified according to the survey to be conducted by the University's expert group.

Teacher's performance monitoring for each area (M_{rof}, M_{to}, M_{org}, M_{ca}) is calculated by adding all available results for indicators calculated within each of the areas. The comprehensive assessment of the departments' innovation performance (M_c) is the result of diving the sum of all absolute indicators for the monitoring of the research and teaching staff working in the department (with the exception of external part-timers) by their number (n): $M_c = M_{rts}(1) + M_{rts}(2) + M_{rts}(3)... + M_{rts}(n) / n$.

Teachers' performance monitoring excludes those teachers who, during the year under review, received a word of warning from the university president for breaches of work discipline.

The monitoring system, which is subject to testing, and the results obtained had become a topic for discussion that brought together university teachers and thirty-two regional education officials.

3. Results and discussion

Information on each indicator in every department was based on the data provided by the Individual Monitoring Forms filled out by the departments' research and teaching staff (with the exception of external part-timers). Table 3 shows research and teaching activity monitoring results.

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Table 3. *Research and teaching activity monitoring results, M_c*

	Departments					
	EGD	Physics	MSNMT	MDP	Chemistry	MMD
1. RESEARCH WORK	265	218	394	286	194	142
2. TEACHING ACTIVITIES	148	114	211	164	96	88
3. ORGANIZATIONAL ACTIVITIES	108	62	142	59	54	35
4. COUNSELLING ACTIVITIES	138	46	154	35	52	27
M_c	659	440	901	544	396	292

Monitoring outcomes revealed that the Department of Material Science and New Material Technology had achieved the best results in all types of professional innovation activities, followed by the Department of Engineering Graphics and Design and that of Machinery and Device Production.

When evaluating the research outcomes, it should be stressed that the quality of teacher's performance is one of the leading aspects of education quality management. On the one hand, highly qualified teachers should create optimal conditions for students to receiving higher education in conformity with their preferences and demands. On the other hand, these teachers should be able to perform in an environment open to science-based knowledge and to creative freedom of teachers.

The assessment of the monitoring system in the departments of the Physics and Technology Faculty demonstrated the possibility for differentiating their performance and confirmed our hypothesis on the effectiveness of university teachers' and departments' performance monitoring based on the established system of indicators.

Further discussion of the results focused on specific aspects of the monitoring process, which should become, according to the experts surveyed, a well thought-out strategy aimed at implementing management actions with a view to determine the actual state of the quality of education, to predict its future trends and to specify error correction mechanisms for achieving the highest educational standards in the relevant higher education institution/university.

In this way, the implementation of a monitoring system refers to a specific sequence of actions that are required to achieve the stated goals. It is an algorithm of actions, which, if carried out correctly and in a proper sequence, would lead to preplanned and anticipated outcomes.

Researchers argue that the following should be the objectives of university teachers' and department's performance monitoring, in addition to professional activities of an entire department or of a specific teacher:

- ✓ promoting professional advancement of research and teaching staff;
- ✓ increasing all types of the university's professional innovation activity;
- ✓ encouraging creativity;
- ✓ fostering teaching and research work;
- ✓ creating competitive conditions, increasing motivation and performance;
- ✓ stimulating the teachers' collective interest in enhancing general performance of the department and of the university;
- ✓ determining the extent to which performance of a specific department or faculty member influences the effectiveness and quality of education of the university in general (Filatova, 2012).

At the same time Payevskaya (2012) argues that the following conceptual principles should form the basis of university teachers' and department's performance monitoring:

Transparency: a clear system of indicators used to assess the performance of department and faculty with the possibility of controlling them;

Credibility: reception of unbiased information on performance of department and faculty based on the proposed system of indicators;

Richness and comprehensiveness of the system of indicators: information used to determine performance of department and faculty encompasses major areas of activity based on statistical and other reports (Payevskaya, 2012).

Speaking of monitoring automation in the university, experts emphasize that a special branch of the University – the Management Automation Center – needs to participate in the monitoring process in order to tackle the following tasks:

- ✓ processing the information provided by teaching staff;
- ✓ building a computer database of the appropriate indicators;
- ✓ calculating the integral monitoring assessment of each teaching staff member;
- ✓ making a results-based list of winners out of ten best teaching staff members for each academic position.

University staff also highlighted the need to create a university management body – Monitoring University Commission, the primary objectives of which are:

- ✓ To verify, if needed, the comprehensiveness and credibility of the information provided by departments;
- ✓ To handle conflict situations;
- ✓ To submit proposals concerning the number of incentive positions in the best teachers' lists based on their professional activity outcomes considering teaching positions;

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✓ To prepare a draft order on 'Teaching Staff Performance Monitoring' and to present it to the Academic Board for approval and to the university president for signature.

Given that teaching staff members play multilateral roles in the educational process, which are not limited to the teaching process alone, monitoring of research activities of teachers was one of the central assessment criteria of their professional activities. At the same time, the mere presence of research projects in the departments provides an incentive to further training of teachers and to students' involvement into practical work. Training of students majoring in Physics, Mathematics, Sciences and Technologies cannot take place without implementing research work into the educational process. Therefore, in Vasilyev's view, (2016) the extent of implementation of research work into the educational process will be different depending on the program, and its assessment should take into consideration both the number of students participating in fundamental and applied research and the outcomes of students' activities that are published during various academic events.

Functioning of the research component of the educational process also depends on how much the teacher uses experimental research results when teaching academic disciplines and determining the learning content, assignments for in-class and extracurricular activities, topics of term, diploma and Master's theses and projects. This aspect of research work is often overlooked when assessing teacher's performance. However, it attests to the intensity and continuity of the teacher's professional growth and to his/her efforts to involve student into experimental work.

Our analysis of leading international higher education institutions shows that the proposed monitoring method shares a lot with the teacher's evaluation system adopted in American universities. As a rule, it evaluates university teacher's performance in terms of research, teaching and community service. At the same time, university management predetermines what activities will be subject to evaluation and includes them into official contracts. Some contracts note specifically that the teacher's activities can be evaluated only in the areas listed in the official document (Massy, 2008).

Let us stop on those aspects of teachers' performance monitoring that were not included in our study, which could have affected the general evaluation of teachers' performance.

According to professional standards applied in German higher education, a good teacher should be able to communicate with his audience, possess clear and effective speaking skills, good teaching techniques; should be good at fostering students' cognitive abilities. A highly qualified teacher should have relevant knowledge and skills, including the following:

- To have profound knowledge of the discipline;
- To present its content in a clear and straightforward manner;

- To use state-of-the-art learning technologies in the educational process;
- To combine theory with specific examples derived from practice and to ask questions that help students understand investigated topics from alternative perspectives;
- To have attentive listening skills;
- To have a good sense of humor and to connect with students;
- To be deeply committed to his or her work and to pass on his or her admiration for learning to students;
- To possess creative intelligence and to come up with new ideas;
- To continually learn and broaden his or her academic horizon;
- To support students when necessary and positively assess their performance and learning outcomes;
- To feel free to share in fun with more experienced teachers;
- To be patient and always keep in mind that no two students are alike; consequently, the teacher should know the individuality of each of them and, when necessary, explain new material several times;
- To be actively engaged in the trade union in order to share experiences with colleagues and to be aware of discoveries and development trends taking place in the corresponding discipline (Volkwein 1991; Avdeeva *et al.,* 2017; Sultanova and Chechina 2016).

Importantly, according to German scholars, the teacher should be able to give advice to students, that is, to provide counselling guidance to them. At the same time, they stress the fact that the teacher should be familiar with theoretical and methodological counselling principles, no matter what discipline he or she teaches. Counselling services aim to develop students' problem solving skills. In Rechtien's view, (2011) "counseling is an interaction process when one person (student) attempts to gain a better understanding of his or her own problems and to find a solution to them by interacting with another person (teacher)".

Murgatroyd (2010) highlights that high-quality teaching of any discipline, which also includes counselling services for students, can be provided by a teacher who possesses six communication and counselling strategies (directive, informational, confrontational, cathartic, catalytic and motivational). The directive strategy provides the student with specific recommendations in the form of directions guiding the student in his search for the solution to a problem. The informational strategy provides the student with precise information on steps to tackle the problem.

The confrontational strategy is based on the teacher's reflection on the outcomes that will be obtained in response to the ways to deal with the problem as suggested by the student. The cathartic strategy makes it possible to detect emotions accompanying the solution to the problem (sadness, joy, tension, fear, anxiety, pain, etc.) and creates conditions for the student to understand the specificities of his or her cognitive needs and personal development paths. The catalytic strategy aims to accelerate the solution of a problem by directing the student's attention to self-

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regulation and self-evaluation. The motivational strategy is of prognostic nature and fosters the student to find solutions to problems independently by means of self-perfection and self-development. High-quality teaching implies an optimal combination of these strategies. At the same time, a specific pedagogical situation is regarded as a major criterion for optimality (Murgatroyd, 2010).

Retter (2005) rightly considers that teachers should study hard to develop their communication skills and identity and, consequently, to learn counselling methodologies. In his view, a good teacher and counsellor should show acceptance of students (emotional warmth and assessment), empathy (ability to empathize) and authentic (natural and self-sufficient) behavior. All of the above reflects the significance of the communicative component in the modern teacher's profile.

For their part, our experts pointed out that the planning of educational planning process is another major aspect of teaching. The teacher's work plans, which are reviewed at approved at the department meetings at the beginning of the academic year, reflect the content of the curriculum. Teachers' organizational activities are related to the implementation of the required study load, classes and evaluation procedures in compliance with the curriculum and the training schedule. Doing classwork, keeping class registers, individual students' study plans and other records are an integral part of teachers' management of the quality of education.

Furthermore, researchers believe that teachers' effective implementation of the curriculum depends on the formulation of work programs for each discipline and their provision with main characteristics, specificities and requirements for students' acquisition of the study material (Kovalchyuk, 2012; Gladilina *et al.,* 2017).

Another aspect of university teachers' organizational activities is making students aware of the requirements for knowledge and skill acquisition in their relevant disciplines, final exam dates, access to study materials and out-of-class communication with their teacher. Classroom management requires a certain level of quality of teaching staff. In this regard, each teacher's performance must be directed at their skills' development by enrolling in Master's, Ph.D. programs or advanced training courses, by writing academic papers, by defending theses and by drawing on experience of other teachers. Tests and final examinations are a compulsory element of the learning process and of its quality management on part of teaching staff.

Another well-known and undisputed fact is that teacher's performance depends on the comprehensiveness and objectivity of the monitoring of students' progress. To this end, the teacher should use various types of formative and summative assessment that are chosen with consideration of the specific discipline and prospective areas of professional activity.

Consequently, the following aspect that is subject to monitoring research is the availability and comprehensiveness of the students' performance system, including

students' in-class and extracurricular (independent) activities, their participation in research projects provided they are related to their relevant disciplines.

4. Conclusion

The international community regards quality education as one of the quality of life indicators, which is an essential condition for the development of any country. High quality of education is ensured worldwide through a mechanism known as monitoring, which is viewed as a means for obtaining information about the quality of an educational system and of its components. This mechanism is also becoming increasingly common in Russian education.

Our examination of all aspects of teacher's performance leads us to the conclusion that university teacher's innovation performance monitoring should be directed at collecting, systemizing and analyzing data on available research and teaching work, as well as on organizational and counselling activities.

Teacher's performance monitoring is an important means of education quality management. This area, however, requires further research, since it needs substantiation for using this technique at different levels of university management and for analyzing the teacher's professional development during the implementation process.

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