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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

**ISSUES OF IMPROVING THE SALARY SYSTEM FOR
EDUCATION WORKERS**

Speciality: 5312.01 – “Field economy”

Field of science: Economic sciences

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Baku – 2026

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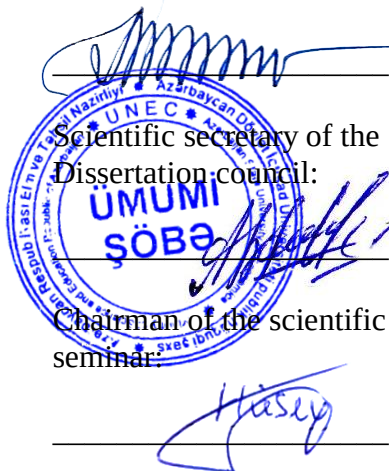
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GENERAL CHARACTERISTICS OF THE WORK

Relevance and Degree of Elaboration of the Topic

In the modern era, the formation and development of human capital, as well as ensuring its competitiveness, constitute one of the fundamental principles of Azerbaijan's development. Thus, the Presidential Decree of the Republic of Azerbaijan dated February 2, 2021, approved the document "Azerbaijan 2030: National Priorities for Socio-Economic Development", where the formation of *"Human capital and a space of modern innovations"* is identified as one of the main directions.

Furthermore, the Socio-Economic Development Strategy dated July 22, 2022, highlights issues such as the creation of a *"results-oriented management and financing system in education"*, the consideration of *"improving the quality of general education through expanding results-based management and financing"*, as well as provisions stipulated in the State Strategy for the Development of Education such as the *"establishment of a competence- and result-based differentiated remuneration system"*, *"creation of a results-oriented and transparent management model in educational institutions"*, and *"development of educational management information systems and a new reporting model"*. All these demonstrate the relevance of the research topic.

At the same time, the draft Socio-Economic Development Strategy of the Republic of Azerbaijan for 2027–2030, approved by the Resolution of the Cabinet of Ministers of the Republic of Azerbaijan No. 356, dated June 18, 2025, is currently being prepared, and it also takes into account issues concerning the formation of *"Human capital and a space of modern innovations"*.

One of the crucial factors at the core of human capital formation is the proper evaluation of teachers' work, which can be considered a priority issue in creating a results-oriented financial incentive system aimed at improving the quality of education. This is because unified salary scales set at a low level, and not taking into account the specific nature of pedagogical work, fail to adequately contribute to the growth of teachers' social status and welfare.

Moreover, the declining incentive role of wages in this field makes the analysis of modern mechanisms of the remuneration system an urgent issue on the agenda.

In parallel with the immeasurable growth of the role of education in modern times, the role and importance of the teaching profession are also increasing. In an era where the significance of human capital is growing, modernization of education and reforms in this direction are of vital importance. At the heart of these reforms is the proper evaluation of teachers' work and the creation of a results-oriented remuneration system aimed at improving the quality of education, which are among the priority directions.

Nevertheless, in conducting research on the theoretical foundations of remuneration and the study of wage systems, the works of such researchers as Sh. Muradov, T. Guliyev, N. Namazov, E. Mammadov, Z. Zeynalova, and K. Yusifova can be noted. In the field of education management, the research conducted by A. Muradov, I. Javadov, E. Suleymanov, A. Ilyasov, S. Imamov, A. Valiyev, A. Novruzova, and others has played a special role. Significant studies on the formation and evaluation of human capital, human resource management, and motivation have been carried out by Sh. Guliyeva, M. Aliyev, R. Muradov, A. Huseyn, and A. Alili. At the same time, in research on the improvement of systems through the application of new innovative methods and digitalization, the contributions of R. Balayev, R. Huseyn, H. Asgarov, H. Bayramov, B. Gasimov, and others are noteworthy.

Among foreign scholars who have studied wage-related problems, the works of A. Smith, G. Becker, T. Schultz, J. Psacharopoulos, A.A. Adamchuk, G.Kh. Gendler, N.A.A. Gorelova, B.M. Genkina, Yu.P. Kokina, B.V. Korneichuk, Sh. Gonulachar, P.A. Yakovlev, S.A. Dyatlov, A.I. Dobrynin, S.G. Strumilin, Ts.P. Litvinova, O.V. Malinovskaya, M.I. Popova, A.I. Chuprova, L.I. Yakobson, E.A. Hanushek, S.G. Rivkin, M.D. Hendricks, J.B. Joseph, V. Katz, A. Leigh, S. Loeb, A. Weiss, F. Mallah, S.E. Bonner, G.B. Sprinkle, J. Britton, C. Propper, E. García, S. Eunice, N.C. Emmanuel, D.N. Figlio, J.A. Grissom, S.L. Viano, and others deserve special attention.

The points mentioned above indicate the relevance of improving

the remuneration system in education and have determined the choice of the research topic.

Object of the research. The object of the research is the remuneration system in general and higher education.

Subject of the research. The subject of the research is the trends and patterns of the wage regulation process in general and higher education, as well as the organization and improvement of results-based differentiated wage systems in educational institutions.

Aim and objectives of the research. The main aim of the research is to study in depth the existing wage system in general and higher education, to assess the criteria for wage differentiation in education, to improve the wage regulation process, and to develop new methodologies and proposals for determining wages.

To achieve this aim, the following objectives were set:

- To study the essence and functions of wages through the analysis of various scientific and theoretical approaches;
- To investigate the forms of wage determination and identify their application features;
- To examine the different forms of results-based wage systems, including differentiated wage systems, and assess their applicability;
- To study and analyze the existing wage system in general and higher education;
- To conduct statistical analyses on the current level and dynamics of wages in education;
- To analyze theoretically and statistically the impact of wage differentiation criteria on work efficiency;
- To develop a new methodology for wage differentiation in education;
- To test the proposed new methodology of wage differentiation in education in practice.

Research methods. The research employs methods such as comparative analysis, induction, deduction, analysis, synthesis, and surveys. In addition, descriptive analysis, regression and correlation, and segmentation-based analysis were used during data processing.

Main provisions for defense. Based on the results of the research, the following provisions are put forward for defense:

- Differentiated wage systems that stimulate labor activity, account for

performance results, and motivate employees to improve the quality of their work are more effective in terms of the efficient use of the wage fund.

- In general education institutions, it is necessary to consider indicators linking education outcomes to wages when differentiating wages for efficient use of the wage fund.
- It is important to study existing indicators and propose a new system of key indicators for determining differentiated wages in general education institutions.
- There is a need to improve the system of indicators used for wage differentiation in higher education institutions.
- A new methodology should be developed for wage systems in higher and general education institutions that aim to improve labor efficiency.
- The proposed methodology for improving remuneration in education needs to be tested in practice.

Scientific novelty of the research. The scientific novelty of the research lies in the comprehensive analysis of the efficiency of teachers' wage systems and in the development of a methodology for studying and improving differentiated wage systems for educational staff. The main innovations include:

- A methodology for the application of results-based differentiated wage systems in general education institutions has been proposed;
- A new indicator has been introduced to ensure the effectiveness of wage differentiation indicators and to implement a monitoring mechanism to eliminate subjectivity;
- The use of clustering methodology based on intellectual systems during evaluations in wage differentiation has been proposed.

Theoretical and Practical Significance of the Research. The theoretical significance of the research is the comprehensive analysis and evaluation of wage regulation in the education system at both international and national levels, along with the development of a number of proposals for its improvement. The study, by emphasizing the idea of linking wages with work outcomes, may contribute significantly to the formation of a quality mechanism in education. The proposed methodology for wage differentiation can play a crucial role in increasing

the efficiency of teaching work and ensuring the effective use of wage expenditures.

The practical value of the research lies in the fact that its findings can be used in shaping the state's wage policy, developing an action plan to improve labor efficiency in education, and establishing a new remuneration system in the education sector.

Approbation and Application. Based on the results of the dissertation, articles have been published in 1 international and 6 local journals. In addition, 6 theses, including 2 abroad, have been published. The results of the research were presented at the following national and international scientific-practical conferences:

- March 10, 2016 – Republican scientific conference on “Expansion of Innovation Activities in Azerbaijan’s Non-Oil Sector” (Baku);
- October 27, 2016 – National scientific-practical conference on “Land Reform in Azerbaijan – 20: Achievements and Prospects” (Baku);
- October 20, 2017 – International scientific-practical conference on “Current Issues of Labor, Employment, and Social Protection” (Baku);
- December 26, 2018 – International scientific-practical conference on “Development of the Social Protection System in Azerbaijan: Yesterday, Today, and Tomorrow” (Baku);
- November 27, 2019 – International scientific-practical conference on “Integration of Science, Society, Production, and Industry: Problems and Prospects” (Russia);
- November 19–20, 2024 – International scientific-practical conference on “Scientific Trends and Trends in the Context of Globalization” (Sweden).
- June 3–5, 2026 – International Conference on “Smart Environment and Green Technologies (ICSEGT 2026)” (Azerbaijan).

Institution Where the Dissertation Was Completed. The dissertation was completed at Azerbaijan State University of Economics.

Volume of the Dissertation. The dissertation consists of an introduction (10648 characters), three chapters (Chapter I: 52101 characters; Chapter II: 62963 characters; Chapter III: 58564 characters), and a conclusion (11392 characters), and includes a bibliography of 159

sources. The work contains 22 tables, 25 graphs, and 1 figure. Excluding the bibliography, tables, and graphs, the total volume of the dissertation is 216565 characters.

STRUCTURE OF THE DISSERTATION

Chapter I. Theoretical and methodological foundations of wage payment

- 1.1. The essence of wages as a socio-economic category
- 1.2. Scientific and theoretical foundations of wage determination forms
- 1.3. Theoretical and conceptual issues of wage system determination in education
- 1.4. Theoretical foundations of differential wage systems

Chapter II. Analysis of the current state of the wage payment system in education

- 2.1. Analysis of the wage payment system in education in the Republic of Azerbaijan and assessment of its impact on labor efficiency
- 2.2. Statistical analysis of the current state of wage payment in education
- 2.3. Priorities of wage payment policy in modern education and study of international experience in their implementation

Chapter III. Directions for improving the wage payment system in education in Azerbaijan

- 3.1. Evaluation of the effectiveness of differential wage indicators in education
- 3.2. Determining the methodology for using intelligent systems in the differentiation of wages in education
- 3.3. Testing the methodology of using intelligent systems in the differentiation of wages in education in practice

Conclusion

References

Appendices

MAIN PROPOSITIONS PRESENTED FOR DEFENSE

- 1. Differential wage systems that stimulate labor activity, take into account the results of work, and motivate employees to improve the quality of their performance are more effective in terms of efficient use of the wage fund.**

Each form of wage payment has its own advantages and disadvantages. Therefore, when determining wage systems, it is very important to consider the principles and type of activity of the enterprise. Insufficiently justified wage systems may lead to employee dissatisfaction, conflicts among workers, and as a result, a decline in labor productivity and quality

F. W. Taylor¹ argued that every worker's wage should be paid according to the results of his/her labor. An efficient employee, who works diligently and achieves excellent results, should receive a high wage. An employee who works effectively will not want to earn the same wage as one who is negligent. From this perspective, Taylor believed that wage payment systems should be structured so that mistakes, deficiencies, and inefficiencies are penalized, while efficiency and effective performance are rewarded. Thus, he supported the establishment of a link between the results of labor and the worker's wage.

Differential wage systems are significant precisely because they are based on work results and allow recognition of differences in employee performance.

Differential wage systems can be used to motivate employees to work more efficiently and productively. A fixed wage, on the other hand, may reduce morale in the workplace, as more productive employees may be dissatisfied with earning the same wage as less effective colleagues. The main principle of differential wage systems is that lagging workers are penalized, leading performers are rewarded, while average performers receive their standard pay.

In contrast, traditional systems have the following shortcomings:

¹ Pasquale M. Sgro. Wage Differentials and Economic Growth (Routledge Revivals): book/ M. Sgro 2015, p.162 URL: <https://www.taylorfrancis.com/books/mono/10.4324/9781315723402/wage-differentials-economic-growth-routledge-revivals-pasquale-sgro>

1. Wage systems are determined not by individual abilities and results, but by the position held.
2. Both responsible and irresponsible workers receive the same wage for a given position, which causes demotivation.
3. Work quality ceases to be a priority for employees.
4. Employees show little interest in the economic efficiency of the enterprise.
5. There is no cooperation between employer and employees based on shared interest.

Differential wage payments, by taking into account the results of activity, ensure the alignment of employer and employee interests, increase mutual benefits, and contribute to the efficient use of wage funds.

For example, in 2023, within the cost structure of labor force maintenance in the education sector, 81% accounted for wage costs, of which **69.7%** were tariff and position salaries, 10.5% were payments for non-working time, and **0.7%** were payments based on production results (Figure 1).

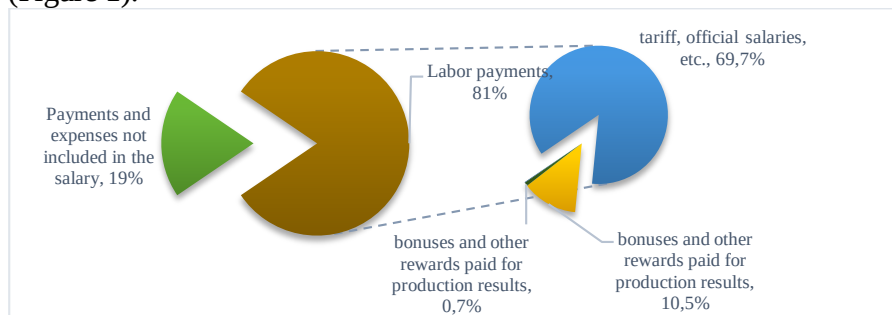


Figure 1. Structure of labor force maintenance costs in the education sector in 2023 (%)

Source: Prepared by the author based on data from the State Statistical Committee of Azerbaijan.

It should be noted that, in terms of bonuses paid based on production results, the “Education” sector ranks last with 0.7%, compared to other economic activities, with the exception of “Repair of motor vehicles” (Figure 2).

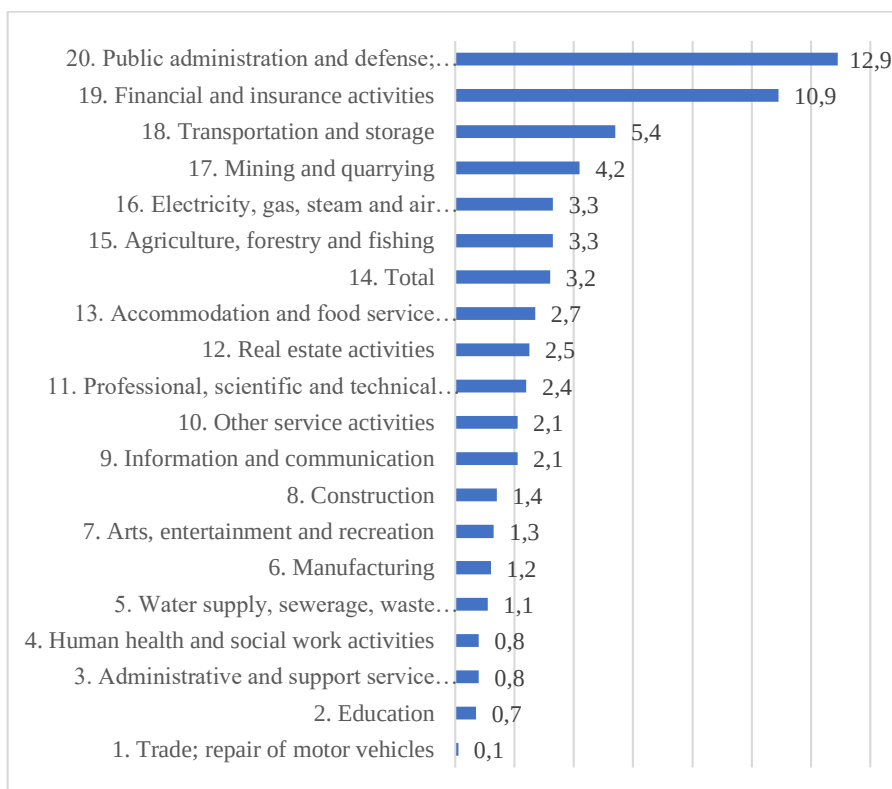


Figure 2. Bonuses and other rewards based on production results in 2023 (%)

Source: Prepared by the author based on data from the State Statistical Committee of Azerbaijan.

Thus, the results of the statistical analysis indicate the need for improvements in the education sector aimed at increasing performance-based payments.

- 2. From the perspective of efficient use of the wage fund in general education institutions, it is necessary to take into account indicators that link teachers' salaries with educational outcomes when applying differential wage systems. In general education institutions, outcome-based indicators are not considered in the calculation of teachers' salaries.**

Performance-based indicators are not being taken into account when calculating teachers' salaries in general education institutions.

Since 2016, teachers in general education institutions have been gradually subjected to diagnostic assessments, and their salaries began to be calculated according to new wage scales. The most recent of these scales was approved by Decision No. 67 of the Cabinet of Ministers dated March 7, 2023.² According to these scales, salaries are mainly differentiated by education level and years of service.

In addition, teachers' salaries are differentiated based on the results of attestation: for those who score between 30 and 50 points out of 60, salaries are increased by 10%, while for those who score above 50 points, salaries are increased by 35%.

As the analysis shows, the indicators considered in determining salaries reflect the knowledge and skill aspect of teachers' work quality; however, they do not determine how the teacher applies this knowledge and skill in their professional activities or the extent to which they transmit their knowledge to students. This raises the question: "To what extent do the lower and upper levels of these indicators affect the quality of education?"

To answer this question, it is necessary to determine the nature of the functional relationship (dependence) between the listed parameters and the indicators of education quality.

To study the relationship between the average monthly salary indicators by administrative regions of the Republic of Azerbaijan (independent variable) and the educational outcomes obtained from the Regional Secondary Education Ranking report, prepared by the Baku Research Institute based on data from the Ministry of Education and Science (dependent variable), Pearson correlation analysis was conducted using the SPSS software (Picture 1).

² Cabinet of Ministers of the Republic of Azerbaijan. Resolution No. 270 of the Cabinet of Ministers of the Republic of Azerbaijan dated July 11, 2016 [Electronic resource]. – Baku, 2016. – e-Qanun Electronic Database. – Date of access: September 24, 2026.

Correlations

		Years of experience	Satisfied with current salary	Satisfied with working conditions	Willing to continue working in the same field	Plan to change employer in the next 3 years
Age (full years)	Pearson correlation	1	,171	,162	,167	,160
	Sig. (2-tailed)		,161	,475	,374	,121
	N	64	64	64	64	64
Years of experience in the profession	Pearson correlation	,171	1	,845**	,258*	,261*
	Sig. (2-tailed)	,161		<,001	,040	,037
	N	64	64	64	64	64
Overall job satisfaction	Pearson correlation	,162	,845**	1	,258*	,385**
	Sig. (2-tailed)	,475	<,001		,040	,002
	N	64	64	64	64	64
Willingness to work in the same field	Pearson correlation	,167	,258*	,258*	1	,085
	Sig. (2-tailed)	,374	,040	,040		,505
	N	64	64	64	64	64
Plan to change employer in the next 3 years	Pearson correlation	,160	,261*	,385**	,085	1
	Sig. (2-tailed)	,121	,037	,002	,505	
	N	64	64	64	64	64

** . Correlation is significant at the 0.01 level (2-tailed).

Picture 1. Pearson correlation analysis between average monthly salaries in education and academic performance indicators

Source: Prepared by the author based on data from the State Statistical Committee of Azerbaijan.

Pearson correlation analysis is used to measure the strength and direction of a linear relationship between variables. Our objective is to examine the linear relationship between average monthly salaries and academic performance indicators. The results of the Pearson correlation show a weak positive relationship that is not statistically significant, meaning there is no simple linear relationship or it is very weak between salaries and academic outcomes.

The Spearman test is used when the data are not normally distributed or when there is no linear relationship between variables. The results of the Spearman test further confirm the Pearson findings.

Kendall's Tau test is used to examine the relationship in smaller samples or between variables of the same rank. This method provides even more precise results than Spearman's test. The results of Kendall's Tau also support the findings of both the Spearman and Pearson analyses.

Thus, as we can see, there is no statistically significant or strong relationship between salaries and academic performance indicators.

Correlations			Monthly average salary
Kendall's tau_b	9th grade result (average score)	Correlation Coefficient	-.003
		Sig. (2-tailed)	.974
		N	66
	11th grade result (average score)	Correlation Coefficient	.068
		Sig. (2-tailed)	.422
		N	66
	Overall school admission score	Correlation Coefficient	.016
		Sig. (2-tailed)	.846
		N	66
	Intention to change employer in the next 3 years	Correlation Coefficient	.040
		Sig. (2-tailed)	.634
		N	66
	Years of experience	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	66
Spearman's rho	9th grade result (average score)	Correlation Coefficient	-.007
		Sig. (2-tailed)	.954
		N	66
	11th grade result (average score)	Correlation Coefficient	.099
		Sig. (2-tailed)	.431
		N	66
	Overall school admission score	Correlation Coefficient	.010
		Sig. (2-tailed)	.935
		N	66
	Intention to change employer in the next 3 years	Correlation Coefficient	.064
		Sig. (2-tailed)	.611
		N	66
	Years of experience	Correlation Coefficient	1.000
		Sig. (2-tailed)	.
		N	66

Picture 2. Results of Spearman and Kendall's Tau correlation analyses between average monthly salaries in education and academic performance indicators

Source: Prepared by the author based on data from the State Statistical Committee of Azerbaijan.

As we can see, none of the three types of analyses found a statistically significant relationship between teachers' average monthly salaries and academic performance indicators. Both statistical and theoretical analyses indicate that there is no connection between salaries and work outcomes in general education institutions. In other words, salary expenditures in education are not used efficiently.

From this, it can be concluded that when addressing issues related to improving the remuneration of labor, it is necessary to link the quality of work with the amount of pay. This would create motivation for effective work among teachers and ensure that salary funds are used efficiently.

3. It is important to study the existing indicators for determining a differential salary system in general education institutions and to propose a core set of indicators.

The analysis and generalization of current approaches to evaluating the performance of pedagogical staff in general education institutions show that the indicators used for this purpose can be divided into four groups:

1. Indicators confirmed by specific documents (educational level, attestation results, etc.);
2. Indicators resulting from subjective evaluation (observation, open lessons, student or parent surveys, teaching methodology used by the teacher, etc.);
3. Indicators calculated based on the grades assigned by the teacher to students (success rate, quality of knowledge, average student score);
4. Indicators based on the results of students' final assessments (results of 9th and 11th-grade exams, entrance exams, tests, etc.).

Currently, since differential salary systems based on work outcomes and quality do not exist in general education institutions in the Republic of Azerbaijan, a new quality-based methodology for calculating salaries can be developed using the relevant indicators and the newly proposed objectivity indicator (the teacher's ability to accurately assess a student's knowledge level). The proposed objectivity indicator removes subjectivity and implements an intellectual control mechanism over the correctness of the indicators included in the system. Before explaining how this indicator works, let us clarify the indicators intended to be included in the electronic expert commission under the proposed methodology.

Thus, an expert commission for evaluating teachers' performance in general education schools can use the following set of indicators:

1. Educational level;
2. Teaching experience;
3. Documents certifying participation in professional development courses, trainings, etc.;
4. Certification results;
5. Proper organization of the teaching process;

6. Results of surveys conducted with students or parents (satisfaction level with the teaching of the subject);
7. Analysis of teaching effectiveness, referred to as students' learning level, which includes the following indicators:
 - Success rate, calculated as the proportion of students who received positive grades;
 - Quality of knowledge, defined as the proportion of students receiving grades of “4” and “5”;
 - Average score of students.
8. Scores obtained in entrance exams (for inter-school comparison);
9. Results of conducted diagnostic activities (control works, official inspections, etc.);
10. Objectivity indicator.

Looking at these indicators, it is clear that the indicators in items 1, 2, 3, and 4 show whether a particular characteristic exists and are confirmed by specific documents. For example, in the certification process, teachers' knowledge and skills in their field, presentation, student evaluation, process organization, and communication abilities are assessed. However, since the evaluation takes place outside the teaching process, it does not reflect work outcomes and effectiveness. A teacher who performs well in the evaluation may not apply these skills in actual teaching. Thus, increasing salaries based on these indicators does not fully contribute to improving teaching quality.

The indicators in item 5 do not have specific numerical values; they indicate the presence of a characteristic and are confirmed by the subjective decision of live expert commission members.

The indicator in item 6 has a specific value but is determined by the subjective judgment of students or parents. While important, it may encourage teachers to assign higher grades.

The indicators in item 7 are calculated based on the grades assigned by teachers themselves. Teachers can inflate grades to increase the value of this indicator, which may also affect the indicator in item 6.

Indicators in items 8 and 9 have specific numerical values and can be considered relatively objective. Our goal is to use the objectivity of these relatively objective indicators to monitor and improve the accuracy of other indicators and provide material motivation. This function is

performed by the newly proposed objectivity indicator, which determines the accuracy of grades assigned by teachers and ensures the reliability of the indicators listed in item 7.

4. There is a need to improve the system of indicators used for differential salaries in higher education institutions.

Most higher education institutions use differential salary systems, and each institution has its own system based on specific indicators.

Based on the dissertation topic, the evaluation indicators used in differential salary systems were analyzed, and improvements were proposed.

Since the work of faculty members in higher education institutions is divided into three parts—scientific, teaching, and self-development—the indicator system is formed accordingly.

1. Indicators characterizing scientific activity include:

- a) Scientific publications and citations – includes scientific articles published in journals of various levels, national and international books, reports, etc.;
- b) Scientific projects, patents, and awards – participation in national and international projects, patents, scholarships, awards, etc.;
- c) Scientific events – chair, member, moderator, or speaker in organizing committees of international and national congresses, symposiums, seminars, etc.

2. Indicators characterizing teaching activities include:

- a) Student evaluation of the teacher;
- b) Student learning achievement;
- c) Participation in international teacher exchange programs.

3. Scientific supervision activity – supervising doctoral and master's theses;

4. Preparation of teaching-methodological materials – textbooks, manuals, programs, etc.;

5. Teaching commissions – participation in doctoral, master's thesis, and graduation defense boards;

6. Professional degree improvement – for obtaining PhD, associate professor, doctor of sciences, and professor degrees;

7. **Foreign language proficiency** – participation in international and national seminars and trainings, obtaining professional certificates, and joining professional associations.

Based on these rules, the “Teacher’s Annual Service Performance Score” is calculated, and certain salary increases are applied.

Among the indicators listed above, except for group 1(a), group 2(a,b), and group 4 indicators, the remaining indicators belong to the comparative analysis group based on their role in the evaluation process. These indicators cover characteristics 1 and 2 mentioned above. However, since grouping is not considered in the existing rules, this was overlooked. For example, heads of departmental chairs automatically obtain points for being members of master’s and thesis defense boards, whereas new teachers with a few years of experience may be deprived of most of these points. Therefore, it is more appropriate to conduct grouping based on pre-defined criteria when evaluating staff performance in higher education institutions.

Factors like “student evaluation of the teacher” and “student learning achievement” may affect each other and could negatively impact quality. Therefore, in the studied salary system, both indicators should be considered as they are somewhat interdependent. At the same time, the student learning achievement indicator, which plays a key role in comparing teachers’ performance, is based on grades assigned by students themselves. This may increase the likelihood of teachers inflating grades. Hence, it would be appropriate to propose a new indicator that ensures the accuracy of both indicators and measures teachers’ ability to assess students.

5. A new methodology should be developed for determining a salary system aimed at improving work efficiency in higher and general education institutions.

When analyzing salary systems based on work outcomes in higher and general education institutions, two factors were considered for improvement:

- Methodology for calculating the “objectivity” indicator, which measures teachers’ ability to assess students’ knowledge accurately.

- Methodology for conducting comparative analyses based on teacher grouping during performance evaluation.

As is known, the decision on whether the grades assigned by teachers correspond to students' actual knowledge is always subjective and determined by humans. Its accuracy cannot be precisely established. From a digital systems perspective, this is considered a "difficult-to-form" or "impossible-to-form" issue. Currently, information technologies known as "Intelligent Systems," "Expert Systems," "Fuzzy Systems," etc., are used to make such decisions.

These systems are developed based on various mathematical foundations. In our solution, we propose a new indicator using existing algorithms and methods built on this logic. In the differential salary model for improving remuneration in education, the proposed new indicator is the **objectivity indicator**, which is determined using expert (intelligent) systems.

According to our proposal, one of the main indicators for evaluating teachers' performance is the objectivity characteristic, determined based on whether the grades assigned to students correspond to their actual knowledge. The objectivity of grades assigned in DİM-administered tests is unquestionable; however, it is difficult to assess grades assigned by school teachers. Traditional methods cannot address these shortcomings. Therefore, using systems such as "Decision Support Systems," "Intelligent Systems," and "Expert Systems" could be valuable.

Expert systems combine test-based assessments with oral or written evaluations, leveraging the strengths of both. Students' knowledge levels are determined using both test results (objective) and teacher-assigned assessments (subjective), and special mathematical methods are used to analyze them. The alignment between these results is investigated to make decisions. Subjective results can be analyzed both per teacher and based on the overall knowledge database.

The use of expert systems to determine the objectivity indicator can be summarized as follows:

- Objective and subjective evaluation results are analyzed by the expert system, and the correspondence between them is examined;

- Based on the results, it is decided whether the teacher-assigned grades correspond to the student's knowledge level;
- The percentage of students whose grades match their knowledge is then used to evaluate the teacher's performance.

As is known, differential systems consider multiple indicators, creating the need to determine a specific comparison value based on the comparison indicator system.

First, according to the proposed method, the studied subjects are grouped based on various factors. This grouping is conducted according to the expert system's decision. After grouping, a comparison coefficient is calculated separately for each group using the proposed formulas.

Thus, the average score for each indicator is calculated first:

$$X_{jo} = \frac{\sum_{j=1}^n X_{ij}}{n} \quad j = 1, m \quad (1)$$

Here,

X_{ij} – the score of factor j for teacher i ,

N – the number of teachers in the group,

M – the number of factors.

Next, for each teacher, a coefficient is calculated for each indicator. That is, the value of the coefficient for factor j for teacher i is determined by dividing the teacher's indicator by the group's average score.

$$K_{ij} = \frac{X_{ij}}{X_{jo}} \quad j=1,m; \quad i=1,n \quad (2)$$

Then, based on the result of formula (2), the final value of the comparison coefficient is calculated, i.e., the coefficients for all indicators of the teacher are summed.

$$K_{jyekun} = \sum_{j=1}^n K_{ij} \quad i = 1, n \quad (3)$$

Considering the above, after the grouping process is completed, we consider it appropriate to use the following algorithm to form the comparison indicator:

- For each indicator included in the differential system, a coefficient is determined as the ratio of the teacher's specific value to the average value for that indicator;

- Indicators that positively characterize a teacher's performance (higher values indicate better work) are summed with a positive sign, while indicators that negatively characterize performance (higher values indicate poorer work) are summed with a negative sign;
- The highest coefficient value is assigned to the best-performing teacher.

7. There is a need for practical testing of the proposed methodology for improving teacher remuneration in education.

To clarify and practically test the methodology proposed in the dissertation, a survey was conducted among university students. The respondents' answers were analyzed using the proposed method, and certain results were obtained.

In the table, the number of cases where the teacher's score differed by 1, 2, or 3 points from the corresponding annual subject score in secondary school was obtained based on the comparison performed by the expert system (Table 1).

Table 1. Evaluation of teacher performance by subject based on 6 indicators

Subject	Success rate (%)	Knowledge level (%)	Average score	Number with 1-point difference	Number with 2-point difference	Number with 3-point difference	Comparison coefficient	Rank
Mathematics	100	93.3	52.3	43	18	3	-0.49	4
Physics	100	95.5	56.7	39	16	5	-0.78	5
Chemistry	100	95.5	64.0	35	13	3	0.28	2
Foreign language	100	96.6	63.8	33	14	4	-0.04	3
Azerbaijani language	100	92.1	69.5	35	12	1	1.03	1

Source: Prepared based on the results of a survey conducted by the author.

According to the calculations performed based on the proposed methodology, Azerbaijani language teachers, whose students demonstrated the lowest knowledge levels, were ranked first, while physics teachers, despite students showing the highest knowledge levels, were ranked last. This indicates that the grades assigned by physics teachers do not accurately reflect the students' knowledge.

If such results are known for each teacher, decisions regarding individual teachers can be made using the same technology. Using the proposed methodology, it is possible to provide salary increments for teachers with high results.

In higher education institutions, the activities of the professor-teacher staff are divided into two areas: scientific activity and student-related activities. Surveys were conducted in both areas, and analyses were performed based on the proposed new methodology.

As mentioned above, when evaluating teacher performance, indicators such as “Success rate,” “Knowledge level,” and “Excellent grades” are also used. Considering these, the comparison based on 8 indicators is shown in Table 2.

Table 2. Evaluation of teacher performance based on 8 indicators

Subject	Success rate (%)	Knowledge level (%)	Excellent grades	Number with 1-point difference	Number with 2-point difference	Number with 3-point difference	Number with 4-point difference	Number with 5-point difference	Comparison coefficient	Rank
Mathematics	100	51.52	9	31	9	0	0	0	0.43	2
Physics	100	59.09	10	33	0	3	0	0	1.17	1
Chemistry	100	46.97	9	25	6	3	0	0	0.24	3
Foreign language	91	53.03	14	36	5	5	1	2	-5.71	4
Speech culture	100	59.09	11	20	14	9	6	0	-6.13	5

Source: Prepared based on the results of a survey conducted by the author.

At the same time, the evaluation of the scientific research activities of the professor-teacher staff using the grouping methodology was practically tested based on a pilot survey conducted with 66 respondents. In such calculations, the coefficient value indicates how the teacher uses their internal capabilities and their level relative to peers.

Thus, based on the proposed methodology, it was determined that the best teacher according to scientific activity indicators is a teacher aged 50–55 with a score of 19.85, while the weakest teacher is aged 30–35 with a score of 2.25. It should be noted that the evaluation can be performed by grouping various criteria.

As a conclusion of the dissertation work on general provisions, a number of results have been obtained regarding the improvement of

remuneration in education, and a new methodology has been proposed in the relevant direction. Specifically, the author's approach to determining the remuneration system in education focuses on increasing the connection between the quality of education and the amount of salary, as well as on establishing a quality-based salary system. In order to implement the relevant result, it is envisaged to form new comparative evaluation indicators in the creation of an intellectual system for remuneration in education, including the determination of one of the key indicators considered in the evaluation of teachers' performance — the objectivity indicator, which identifies whether the grades assigned to students correspond to their knowledge, using expert systems. Taking these into account, a relevant methodology was developed, tested in practice, and positive results were achieved.

RESULTS

1. Research demonstrating the direct impact of a results-based salary system—capable of meeting teachers' expectations—on enhancing the effectiveness of their work indicates a clear link between remuneration and the quality, efficiency, and productivity of a teacher's performance.
2. A new system can be established in the education sector by utilizing "competency-based" differential salary models alongside indicator systems based on expert assessments. To achieve this, it is essential to review the existing indicator system and develop a new one.
3. There are significant disparities between the nominal and real growth rates of the average monthly salary in the education sector; while calculations show a high growth rate in nominal terms, very low rates have been observed in real terms.
4. An analysis of average monthly salaries across economic and administrative regions reveals that the highest figure—exceeding the national average—is found in Baku, while the lowest is recorded in the Sheki-Zaqatala economic region. Furthermore, an increase in the degree of uneven distribution of indicators across administrative districts has been observed over the last five years; this implies that

wage disparities between administrative districts have widened over time.

5. A comparative analysis of average monthly nominal wages by type of economic activity reveals that wage levels in the education sector are low compared to many other fields—ranking in the bottom five—and are 25% below the national average.
6. An analysis of the workforce in the education sector based on wage levels shows that the majority of employees earn between 301 and 350 manats; notably, despite increases in the minimum wage during the period under review, a decline was observed in the number of employees earning below the minimum wage—a trend that can be considered positive.
7. An analysis of average monthly nominal wages by type of economic activity and gender indicates that men earn higher wages than women across all sectors, including education. Thus, the gender wage gap is narrowest in the "Education" sector, ranking second only to "Public administration and defense."
8. An analysis of the average monthly nominal wage in education by type of ownership reveals that the average monthly wage in the non-state sector exceeds the corresponding figures for both the national average and the public sector, and this trend is on the rise. It should be noted that, unlike the non-state sector, the public sector is experiencing a downward trend in the number of salaried employees. Consequently, the growing number of educational institutions and higher wage levels in the non-state sector could attract highly qualified teachers to that sector.
9. Wage differentiation in general education schools is based on factors such as education level, length of service, certification results, and teaching workload. However, theoretical and statistical analysis indicates that these differentiation criteria do not effectively foster motivation among teachers.
10. Each higher education institution has its own differential salary system based on internal regulations; however, the state has not established a specific standard or regulatory document governing this system. Given the importance of establishing norms in this area,

it would be appropriate to draft a regulatory document outlining general rules for such systems.

11. An analysis of the impact of salary levels on educational outcomes in countries with high performance indicates that, internationally, teacher salaries have a positive effect on students' test results.
12. In the Republic of Azerbaijan, indicators used to differentiate teacher salaries—such as education level, teaching load, years of service, and certification results—reflect the knowledge and skills aspects of teaching quality, but they do not determine the extent to which these skills are applied in the pedagogical process or the effectiveness with which knowledge is conveyed to students. Thus, the results of the regression analysis regarding educational indicators and salary levels show no correlation between educational outcomes and salary amounts. In this regard, when determining salaries in the education sector, it is crucial to establish indicators that link salary to educational outcomes—rather than merely those that drive salary increases—thereby motivating teachers toward effective performance and ensuring the efficient use of wage funds.
13. Given the absence of differential wage systems based on work outcomes and quality in general education institutions, it may be appropriate to establish such systems that take into account: indicators verified by specific documentation (e.g., level of education, certification results); results of subjective assessments (e.g., observation, open lessons, student or parent surveys, teaching methodology); the teacher's own student assessment results (e.g., summative assessments, daily evaluations); and students' final assessment results (e.g., 9th and 11th-grade exam results, university entrance exam scores, standardized tests).
14. Many higher education institutions establish differential supplements alongside base salaries. Each institution operates a differential wage system based on its own specific criteria. These systems do not rely on categorizing academic staff based on their specific characteristics. However, it is more appropriate to conduct staff performance evaluations in higher education institutions based on specific groupings (e.g., subject area, academic degree, etc.).

15. In higher education institutions, the mutual evaluation of teachers by students and students by teachers introduces the risk of subjectivity and potential reciprocal influence between these assessments. Consequently, a methodology has been proposed to determine and apply an "objectivity indicator"—a metric implemented via intelligent systems to serve as a control mechanism and facilitate wage differentiation.
16. Pilot surveys were conducted across general and higher education institutions to empirically test the proposed objectivity indicator. The survey results were analyzed using the newly proposed methodology. The analysis confirmed the methodology's viability and demonstrated that, once such results are available for individual teachers, the same technological approach can be used to inform decisions regarding specific instructors.
17. The primary advantage of the proposed methodology is that it establishes the degree of alignment between the grades assigned by teachers and actual exam results. The processes of teachers evaluating students and students evaluating teachers do not create a conflict of interest. The proposed indicator functions, in a sense, as a mechanism for verification and intellectual oversight, thereby ensuring the objectivity and accuracy of quality metrics regarding work outcomes. Such an evaluation of teachers' performance can yield the following positive results:
 - If a teacher is provided with a list of students for whom they assigned questionable grades, they can analyze their work and strive to better structure their future activities;
 - Each teacher's performance will be assessed based on the percentage of their students who received objective grades, which will encourage the teacher to work more effectively and efficiently; –
Monitoring recorded grades will both make it more difficult for parents to make requests of teachers and enable teachers to refuse such requests to avoid a decline in their own performance metrics.
 - Since teacher performance is determined based on the percentage of objective grades, it will be possible in the future to eliminate the test-based examination method by organizing periodic monitoring.

18. A methodology based on a mechanism for grouping teachers according to various criteria has been proposed to evaluate the non-pedagogical aspects of their work. Evaluating the non-pedagogical component of performance in this manner can be significant in the following respects:
- Calculating the coefficient value separately for each group reveals how a teacher utilizes their capabilities, as the grouping process places teachers with similar capabilities into the same group.
 - Calculating the coefficient value separately for each group determines a teacher's standing relative to the capabilities of their peers within the same group.

The main provisions of the dissertation are reflected in the following published scientific articles:

1. The Role of Salary in Quality Management at Higher Education Institutions and Issues of Improving Remuneration in This Context. // Baku: Labor and Social Problems. – 2017. – №2(20), – pp. 178-185.
2. Theoretical and Practical Issues of Remuneration. // Baku: Labor and Social Problems. – 2015. – №2(16), – pp. 49-57.
3. Salary as a Stimulating Factor in Expanding Innovative Pedagogical Activity. // Expanding Innovation Activity in Azerbaijan's Non-Oil Sector. Scientific-Practical Conference – Baku: AzTU. – 2016. – pp. 132-135.
4. Some Issues in Determining the Economic Basis of Minimum Wage. // Labor and Social Problems. – Baku: 2017. – pp. 34-41.
5. Some Issues of Using Expert Systems in Determining Salaries in the Education System. // Current Issues in Labor, Employment, and Social Protection. International Scientific-Practical Conference. – Baku, 2017. – pp. 129-131.
6. Using Economic Analysis Methods to Improve Remuneration in General Education Schools. // Ministry of Labor and Social Protection of Population. Development of the Social Protection System in Azerbaijan: Yesterday, Today, and Tomorrow. – 2019. – pp. 247-251.

7. Issues in Improving Remuneration of Pedagogical Labor in General Education Schools. // Ministry of Finance of the Republic of Azerbaijan. – Baku: Finance and Accounting. – 2016. – pp. 33-38
8. The Role of Salary in Stimulating Pedagogical Labor in General Education Schools. // Baku: Labor and Social Problems. – 2016. – №1(17), pp. 144-150.
9. Study of Remuneration Practices in Education Systems of Foreign Countries. // Baku: Ministry of Agriculture of the Republic of Azerbaijan. – 2016. – pp. 395-397.
10. Issues of Wage Increase and Quality Management in Higher Education. // Scientific Bulletin. – Ukraine, Odessa. – 2018. – pp. 110-109.
11. Use of Comparative Analysis Indicators in Improving the Remuneration System in Education. // Integration of Science, Society, Production and Industry: Problems and Prospects. / Agency for International Studies. Taganrog – Sterlitamak: AIS, – 2020. – pp. 98-102.
12. Formation of a Result-Oriented Salary System in Education: Studying the Relationship Between Salary Amounts in Education and Educational Outcomes. // Scientific Trends and Trends in the Context of Globalization. Proceedings of the 8th International Scientific and Practical Conference. Umeå, Kingdom of Sweden, – 2024. – pp. [page numbers].
13. The Importance of Differential Salary Systems in Increasing Research Activity at Higher Education Institutions. // Article. “Economic Reforms” Scientific-Analytical Journal. Baku. – 2025. – №1(12), – 13 pages
14. Artificial Intelligence-Supported Compensation Systems for Stimulating Research Activity in Higher Education Institutions. // International Conference on Smart Environment and Green Technologies. Springer Nature Switzerland, Lecture Notes in Networks and Systems, – 2026.



The defense will be held on 28 October 2026 at 14:00 at the meeting of the Dissertation Council FD 2.10 of Supreme Attestation Commission under the President of the Republic of Azerbaijan operating at Azerbaijan State University of Economics.

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Dissertation is accessible at the Azerbaijan State University of Economics Library.

Electronic version of the abstract is available on the official website of the Azerbaijan State University of Economics (www.unec.edu.az).

Abstract was sent to the required addresses on 25 September 2026.

Signed for print: 16.09.2026
Paper format: 60x84 1/16.
Volume: 40515 characters.
Number of hard copies: 20.

*Printed at the “AA – Poligraf” production and commercial
association using ready-made diapositive films.*

Contact: capevi@internet.ru / (+99455) 201-2809