

Design of tasks for the development of self-organization in pedagogical students with specialization in Mathematics and Economics

Diseño de tareas para el desarrollo de la autoorganización en estudiantes de pedagogía con especialización en Matemáticas y Economía

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ABSTRACT:

Purpose of the research is design of types of tasks aimed at developing readiness for self-organization in pedagogical students. Research methods are theoretical analysis, modeling, experimental work elements, correlation analysis. The essence of the "readiness for self-organization" concept was defined and its constituent skills were distinguished; the types of tasks aimed at formation of readiness for self-organization in students were described. Criteria and indicators of formedness of readiness for self-organization, used in diagnostic assessment, were distinguished.

Keywords: teaching undergraduate and graduate students, readiness for self-organization, types of tasks aimed at forming readiness for self-organization in students, designing tasks for forming readiness for self-organization in students.

RESUMEN:

El propósito de la investigación es diseñar tipos de tareas dirigidas a desarrollar la preparación para la autoorganización en estudiantes pedagógicos. Los métodos de investigación son análisis teórico, modelado, elementos de trabajo experimental, análisis de correlación. Se definió la esencia del concepto de "preparación para la autoorganización" y se distinguieron sus habilidades constitutivas; Se describieron los tipos de tareas dirigidas a la formación de la preparación para la autoorganización en los estudiantes. Se distinguieron los criterios e indicadores de capacidad de preparación para la autoorganización, utilizados en la evaluación diagnóstica.

Palabras clave: enseñar a estudiantes de pregrado y posgrado, preparación para la autoorganización, tipos de tareas dirigidas a la preparación para la autoorganización en los estudiantes, diseño de tareas para la preparación para la autoorganización en los estudiantes.

1. Introduction

Any professional should have readiness for self-organization and self-development regardless of their position. Currently, readiness for self-organization is a social order.

New Federal State Educational Standards of Higher Education (hereinafter referred to as FSES HE) for Teaching Education (both undergraduate and graduate programs) encompass a group of universal competences related to self-organization and self-development (Ministry of Education and Science of Russia, 2018a; 2018b). The requirements for learning outcomes of undergraduate students enumerate the following competences: to be able to manage their time, as well as to build and implement a self-development trajectory based on education principles throughout the lifetime. The graduate project of the Federal State Educational Standards of Higher Education in the abovementioned field contains the competence "to identify and implement the priorities of one's own activities and ways to improve them based on self-assessment". These competences are closely related to the requirements of professional teaching standards (Ministry of Labor and Social Protection of the Russian Federation, 2013; 2015), whereby the skills to analyze various types of classes (lessons), a work experience internship, and the use of selected methods and forms of training are specified. Based thereon, it can be stated that the content of instructional subjects should enhance the focus on developing readiness for self-organization and self-development in students.

In the scientific literature there are publications on the subject. Neverova and Maximova (2017), who explore the formability of readiness for self-development in students, distinguish activity, communication, intellectual, and motivational components within its structure. A professional immersion technology is considered as a means thereof. In the article, the authors pay attention to the activity component that includes the use of independent work techniques to obtain professional knowledge; introspection; self-assessment of information; forecasting the results and their correction. Belenkova (2016) through the example of subject "Foreign Language" describes the main provisions of a technology aimed at formation of metacognitive skills. Its key provision is that a student appears as an actor in educational activity. The teacher motivates a student and encourages their self-study and self-development. Obydenkova (2017) describes the experience of using Internet projects as a means of the FSES HE implementation, including for formation of readiness and ability for self-education and professional self-development in students studying "Psychology", "Psycho-pedagogical education", and "Social work". The author introduces a competence assessment of the Internet project implementation. The use of techniques for self-assessment and peer assessment of competences as a means of activation is considered by Shestakova et al. (2016). The authors found that the use of self-assessment of professional competencies and their mutual evaluation have a positive effect on the activity of student teachers, increase motivation.

Karambirov (2014) determines the factors of students' self-organization when organizing their independent work and highlights development of personality traits as one of the goals. He dwells upon external and internal factors of this process and defines "self-organization as a process of systematic and consistent activity of an individual, aimed at organizing and managing their actions, behaviors, and conduct" (Karambirov, 2014, p. 62). Pakhomova (2011) also considers students' independent work as a fundamental premise for laying the self-organization and self-education groundwork. She proposes to use role-playing and business simulation games, scientific activities, participation in competitions, and rating for this purpose and emphasizes a teacher's personality as an important motivating factor for students. Mikhnevich (2012) explores the first-year students' self-organization at the stage of adaptation to university studies. The focus is on the ability of a student to carry out their activities independently (without a teacher prompting). Among the first-year students' specific self-organization skills, the author distinguishes planning, rational use of time, independent acquisition of knowledge, control, and appropriate assessment of their own activities.

In their student manual, Zavada et al. (2017) consider the concepts of self-organization,

self-regulation, and self-management, various techniques, methods, and errors of self-organization. A student manual by Miloradova and Ishkov (2016) considers a psychological technology for competent goal setting and selecting ways to achieve it. The manual seeks to foster students' self-development and self-organization motivation.

This paper proceeds from the definition of Zaenutdinova (2000) whose concept of readiness for self-organization implies an integral quality of an individual manifesting in their need and ability to carry out a structured conscious self-organization and self-management activity. The author emphasizes that "readiness for self-organization is formed based on the natural aspiration of an individual for freedom, openness, integration with surrounding persons and the world as a whole, for maturity and development, for the search for meaning, and for manifestation of one's human potential" (Zaenutdinova, 2000, p. 11). The publication highlighted educational conditions that contribute to formation of readiness for self-organization. From the perspective of the topic under consideration, the following ones are of interest (Zaenutdinova, 2000, p. 12):

- actors in the educational process have freedom of choice providing them with the possibility of self-determination in process;
- a real opportunity has been created for the participants in the educational process to implement the initiatives they announce;
- dialogic interaction of actors in the educational process has been ensured at a number of levels.

Based on the positions considered above, what this paper means by readiness for self-organization is the need and the ability of a student to carry out structured conscious activities on organizing and managing their independent work. Moreover, the emphasis is laid on self-organization manifestation in the learning activity. Therefore, formedness criteria are to indicate this aspect. Let us disregard readiness for self-organization in everyday life and other areas of student activities. This assumption seems to be valid since it primarily refers to formation of competences within the Federal State Educational Standards of Higher Education. Second, it is this readiness that would allow a university graduate to transfer the acquired skills and expertise to their professional activities in the future.

Noskova and Kulikova (2018) note that self-organization is possible when starting the process of individual initiative. This is achieved through purposeful activities based on inner determination, capacity building, and creation of positive ideas and role models.

Bazhenova (2015) explores the psychological aspect of self-organization in a students' personality; Knyazkova (2014) deals with motivational and value-based aspects of the student self-organization culture, Mokritskaya and Zinchenko (2015) study the role of independent work of a student in the individual development and self-organization, Novikova and Skachkov (2014) consider self-organization of students in the context of competence-based approach to education, Pakhmutova (2015) explores special aspects of personality self-organization in a student engaged in research activities at different training stages, Smolyar and Knyazkova (2016) deal with the ability of students to think in terms of self-organization culture, Sofronova and Amanbayeva (2017) consider self-organization of students in the rating system, Sungurova et al. (2017) study special aspects of student self-organization with different network communication strategies, Vasiliev and Zaglyadina (2017) analyze self-organization problems in a dynamic interaction of students and the environment, Zakiryanova (2017) addresses algorithms for mastering self-organization methods.

Methods of teaching mathematics are discussed in the work of Akinsola and Olowojaiye (2008), Chan (2016) focuses on active learning.

Various aspects of the topic under consideration were explored by different scientists: means of increasing the effectiveness of independent work of students (Belenkova, 2016); pedagogical conditions of formation of readiness for self-organization of students (Zaenutdinova, 2000); professional immersion technology (Neverova & Maksimova, 2017). The very concept of readiness for self-organization was considered and work options in the line thereof were proposed; there are study guides for students, dealing with the

philosophical and psychological aspects of self-organization and self-development. However, the literature provides no description of types of tasks for students through the example of maths teaching methodology.

The indicated contradiction between the need to form readiness for self-organization in pedagogical students (majoring in Mathematics and Economics) and the lack of such research in the literature suggests the relevance of the topic.

Problem of the research: what should be the types of tasks aimed at forming readiness for self-organization in pedagogical students (majored in Mathematics and Economics) (through the example of instructional subjects)?

Purpose of the research is design of types of tasks aimed at developing readiness for self-organization (through the example of instructional subjects) in pedagogical students (majored in Mathematics and Economics).

The goal is to be achieved by solving the following problems: to define readiness for self-organization and to analyze the literature on the subject; to describe the types of tasks aimed at developing readiness for self-organization in students (through the example of instructional subjects); to describe introduction of the developed types of tasks in work with pedagogical students (majored in Mathematics and Economics) (through the example of instructional subjects); to identify possible risks and ways to minimize them when using the proposed types of tasks aimed at developing readiness for self-organization in students. The research base was the Solikamsk State Pedagogical Institute branch of the Perm State University (hereinafter referred to as the SSPI branch of the PSU).

The hypothesis is an assumption that in order to form readiness for self-organization in pedagogical students (majored in Mathematics and Economics) (through the example of instructional subjects), the following types of tasks can be used: self-assessment and peer assessment of competences with self-improvement task statement; preparation and defense of summaries and guidance papers (compendia of lectures, extracurricular activities, programs, etc.); tasks for students to choose an actual content and a form for their guidance papers, final papers, and projects (subject to the condition that a student should demonstrate a certain set of competences during the preparation and defense of their research); to include in a performance assessment rating the possibility for a student to choose a task (individual work).

2. Materials and methods

Research methods are: theoretical analysis aiming to determine the concept of readiness for self-organization and the degree of scientific development of the issue under consideration in the literature; modeling aiming to describe types of tasks; experimental work elements aiming to introduce the described types of tasks when working with students in instructional subjects; correlation analysis for processing and presenting the introduction results.

Experimental work was carried out on the basis of the SSGI branch of the PSU in groups of pedagogical students (majored in Mathematics and Economics) in 2016–2018. A total of 27 students of the experimental group, 27 students of the control group (pedagogical students, majored in Primary Education) participated in the work.

The tasks were introduced into the subject "Methodology of Training and Education in Mathematics" and a number of instructional electives.

The introduction work was carried out by:

Associate Professor L.G. Shestakova, lead instructor;

Postgraduate student Ye.A. Kharitonova (partly methodologies for self-assessment and peer assessment of competences in the framework of the thesis research).

The work consisted of 3 stages: the first stage was preparatory (studying literature, developing materials), the second stage was forming (introducing the developed types of tasks into the experimental group), the third stage was the control one (conducting and analyzing the results of the control section in the experimental and control groups).

Performance criteria for the types of tasks used were the following:

1. Formedness of readiness for self-organization in students:

- the ability to plan their independent work in the rating assessment mode and to meet the deadline;
- the ability for self-assessment of certain competences and for self-improvement task statement;
- readiness to choose and carry out "free" tasks.

Note that what this paper refers to as "free" tasks is the tasks included in the rating that have general limitations (performed within the material of the course studied and allowing to a student to demonstrate the competences assigned to it).

2. Improving the effectiveness of participation of the students from these groups in competitions, conferences, preparation of publications, etc.

The described types of tasks were included in the work with students by comparing them with the average indicators for PSU.

The rough order of task introduction was as follows:

- execution and defense of summaries, reports, and guidance papers;
- self-assessment and peer assessment of competences;
- self-assessment of labor functions enshrined in the professional standard;
- a portfolio preparation;
- tasks that enable a student to choose an actual content and a form of its performance;
- inclusion of "free" tasks in the rating.

Thus, the types of tasks described above were introduced through the example of instructional subjects in work with pedagogical students (majored in Mathematics and Economics).

The work and the types of tasks described above were introduced by the author gradually and were adjusted according to the experience gained.

2.1. Characteristics of the types of tasks aimed at developing students' readiness for self-organization (through the example of instructional subjects)

Tasks were introduced to work with the experimental group.

Instructional subjects are primarily aimed at forming professional competences. Students' readiness for self-organization and self-learning includes the ability to make a self-assessment of their activities, to highlight their strengths and weaknesses, to formulate self-improvement tasks, and plan their work (and time) in these terms.

The types of tasks that are conventional for instructional subjects and teaching practice and are aimed at forming readiness for self-organization and self-learning are planning one's own independent work, self-analysis and analysis of compendia, lessons, answers in seminar classes, etc. From the perspective of competence-based approach, students lack real independence when they are given an opportunity to choose a form and content of work, to take into account their abilities and evaluate their contribution to personal development (professional growth). This is exactly the activity a teacher carries out when planning their career and professional development. From the standpoint voiced by the third- and fourth-year students, the following types of tasks can be recommended within the framework of instructional subjects.

First, regular use of self-assessment and peer assessment of competences with self-improvement task statement. These work techniques are described in publications of Shestakova et al. (2016). Self-assessment is used at the beginning and the end of a training course. A teacher assesses the correspondence of the points awarded by a student to themselves for each competence, the types of activity listed by them included among the

assessed competences, and the assigned self-improvement tasks. The use of the content of the studied subject is an indispensable condition. The use of links with other (previously studied) subjects and a teaching practicum is welcomed. The focus is on what self-improvement tasks a student formulates at the beginning and the end of a training course and which types of work they choose. The peer assessment of competences is carried out at seminar classes, competitions, and conferences. To continue the work during the final year of studies, the professional teacher standard is studied and a student's knowledge and skills envisaged thereby are self-assessed as well as their readiness to perform the stated labor functions. It offers self-assessment (peer assessment) of labor functions from the perspective of the professional teacher standard (Ministry of Labor and Social Protection of the Russian Federation, 2015).

Second, preparation and defense of summaries and guidance papers (compendia of lectures, extracurricular activities, programs, etc.). Every student has to pass through the process so that their skills to correctly perform the above work and to defend it are formed. To this end, at the beginning of a training course, students should prepare an essay as a mandatory assignment (as well as a guidance paper subsequently, before the first teaching practicum). Prior to that, students together with the teacher analyze the requirements for work, a defense presentation, and the defense itself. The group runs an essay and guidance paper competition. Junior students are invited to attend these events (as a kind of propedeutic work).

Third, suggesting that students choose an actual content and form for their guidance papers, final papers, and projects. At the same time, there is a condition that while executing and defending their paper, a student should demonstrate a certain set of competences. The teacher outlines the content only in general terms, for example, a material for the 5th-6th grades, for primary or high school, for classwork or extracurricular work, etc. can be specified. Students can use or continue classroom research or final qualifying projects.

Fourth, the rating assessment of activities should include the opportunity for a student to choose tasks for themselves (individual work), the so-called "free" tasks. A prerequisite is its implementation based on the material of the subject being studied, its research or creative nature, and compliance with the competences assigned to the course. Note that this task is optional. A student decides themselves whether to fulfill it or not. The points for the task are included in the subject rating and affect the final grade. If a student decides that a lower subject grade (for example, satisfactory) is sufficient for them, they may not perform such tasks. When choosing the topic of an assignment and its form, a student can consult the teacher. Examples include participation in competitions of students' papers (scientific or instructional), participation in a conference, publication of an article in a journal or a collection, development of a project, etc.

An approximate distribution of rating points for a subject is given below. The maximum score is 100. The final grade is defined as follows: from 43 to 60 points is satisfactory; from 61 to 80 is good; 81 and above is excellent. At least three control points are envisaged for each semester.

The first control point (30 points), the passing score is 13 points. The self-assessment of self-esteem competence is 10 points (summed up and given as a self-assessment summary at the beginning and end of a course). Answers in seminar classes – 10 points. Performance and delivery to the teacher (or defense) of a practical work or a test (a colloquium or a guidance paper), depending on the program.

The second control point (30 points), the passing score is 13 points. Answers in seminar classes – 10 points. Defense of a guidance paper with peer assessment of a paper of another student – 10 points. Individual task (work) at the discretion of the student based on the studied course material, aiming to demonstrate the competence level – 10 points.

The third control point (40 points), the passing score is 17 points. The final control activity (a pass-fail test, an exam or defense of the final paper or a project, etc.) with an interview about the table completed with self-assessment of competences (from the first control point) – 30 points. Individual task (work) at the discretion of the student based on the studied course material – 10 points.

Fifth, the task of developing a portfolio for confirming the level of professional standard work functions, setting the task of self-improvement and developing routes for further education (based on an analysis of professional standards) can be recommended for students. An example of such an assessment task may be the following.

- Knows the requirements of the professional standard and the FSES HE – 6 points.
- Able to make a self-assessment of a competence formedness; to draw up a portfolio; to identify and design their further educational route and professional career – 6 points.
- Knows self-improvement task statement techniques; able to prepare a portfolio – 8 points.

The paragraph describes the types of tasks aimed at developing students' readiness for self-organization based on the material of the course Methods of Training and Education in Mathematics and instructional courses. The next paragraph describes the introduction of this material into the educational process at the SSPI branch of the SPU.

3. Results

Let us consider the work results. To do this, indicators are given by the selected performance criteria (Table 1).

Table 1
Indicators of Formedness of Readiness
for Self-Organization in Students

Criteria	Indicators
The ability to plan one's independent work in the rating mode and to meet the deadlines.	<ul style="list-style-type: none"> - All control activities (CAs) were delivered in good time – 5 points - Not all of the CAs were delivered within the deadline, but the test (the exam) was passed on time – 4 points - The test (the exam) was passed within 2.5 months after the end of trimester – 2 points - The test (the exam) was passed within 9 months after the end of trimester – 1 point - The test (the exam) was not passed within 9 months after the end of trimester – 0 points
The ability for self-assessment of certain competences and for self-improvement task statement.	<p>The points are added together.</p> <ul style="list-style-type: none"> - A student clearly identifies the types of activities (related to a particular competence) they are able to carry out. They lay emphasis on the subject being studied or demonstrate the applicability of its content in professional activities – 2 points - There is an evident progress over the time between completing the competence self-assessment table in the first and the last lessons in the subject – 1 point - Professional self-improvement tasks are clearly and concisely formulated – 1 point - Expectations from studying the subject have been defined – 1 point - The described activity types, the estimate given and the stated self-improvement objectives are obviously consistent (columns 2, 3, 4) – 1 point
Readiness to choose and perform "free" tasks.	<p>The points are added together.</p> <ul style="list-style-type: none"> - A student has completed at least two "free" tasks in a trimester – 2 points; each task is given 1 point

	<ul style="list-style-type: none"> - A student has prepared a paper for a competition (a conference or a publication) within another organization – 2 points - A student has prepared a paper for a competition within the SSPI – 1 point
Improving the effectiveness of participation of the students from these groups in competitions, conferences, preparation of publications, etc.	The total number of a student’s publications, diplomas, certificates granted for work on the methodology of training and education in mathematics is indicated

Source: Research findings

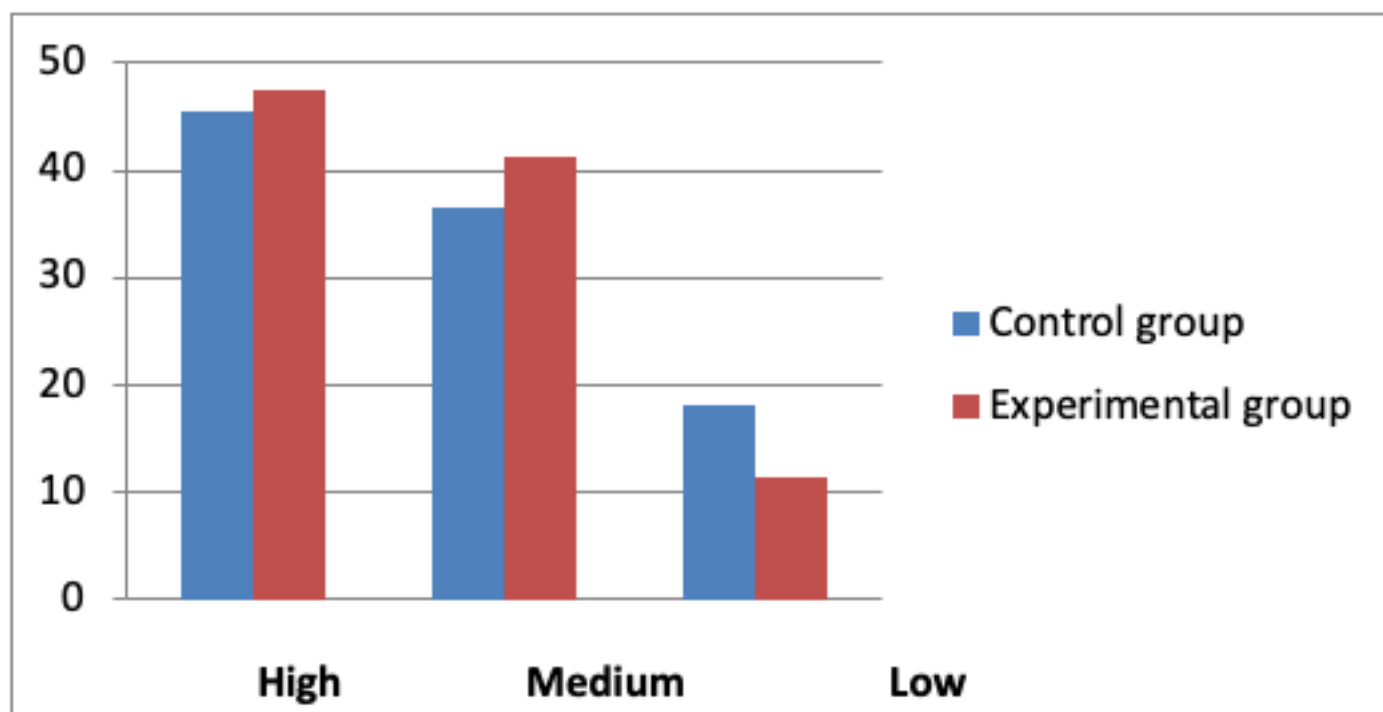
The results were summarized in September 2018 for a group of pedagogical students (majored in Mathematics and Economics). There were 27 students in the group. The results were derived from the students’ electronic portfolio data. The points given for the first three skills were summed up for each student. According to the total grade points, the students were divided into three levels:

- high – from 14 to 16 points;
- medium – from 9 to 13 points;
- low – those who scored less than 9 points.

The results of the distribution in the control and experimental groups the pedagogical students (majored in Mathematics and Economics) by the formedness levels of readiness for self-organization are presented in a diagram (Figure 1).

Figure 1

Distribution of Pedagogical Students (Majored in Mathematics and Economics) According to the Formedness Levels of Their Readiness for Self-Organization



Source: Research findings

Improving the effectiveness of participation of the students in competitions, conferences, publications, etc. is also presented (Table 2) for the same group of students for 2018.

Table 2

Improving the Effectiveness of Participation of the Students in Competitions, Conferences, Publications, etc. for 2018 (27 experimental group students)

Outcome of Participation	Number		In Total per Each Student
	Within the SSPI	Outside the SSPI	

Diplomas	2	14	1.45
Commendations	3	n/a	0.27
Certificates	3	7	0.9
Publications	13		1.18
Enhanced scholarships for research and development achievements	4		0.36

Source: Research findings

Total across the PSU for 1391 students participating in research activity (2018): 75 publications; 110 medals, certificates, and diplomas. On average, each student has 0.13 results.

Total across the PSU for 3045 students participating in research activity (2017): 149 publications; 266 medals, certificates, diplomas, and participations in exhibitions. On average, each student has 0.14 results.

The results presented above allow for the conclusion that the experimental group of students showed results above the PSU average. The formedness of readiness for self-organization in students was evaluated in a group of pedagogical students (majored in Mathematics and Economics). The test involved 27 students. The summary data is presented in the tabulated form (Table 3).

Table 3
The Results of Monitoring the Formedness
of Readiness for Self-Organization in Students

Student	Skill 1 To plan their independent work in the rating mode and to meet the deadlines	Skill 2 The ability for self-assessment of certain competences and for self-improvement task statement	Skill 3 Readiness to choose and execute "free" tasks	Academic performance
1	5	6	5	5
2	5	6	5	5
3	5	6	5	4
4	4	5	5	4
5	4	5	5	4
6	5	4	3	4
7	4	4	4	4
8	5	4	2	4

9	5	4	1	4
10	4	4	0	3
11	0	3	0	3
12	4	3	4	4
13	4	6	5	4
14	5	4	4	4
15	5	4	5	3
16	5	4	5	3
17	5	4	5	4
18	4	4	5	4
19	4	6	3	5
20	4	5	4	5
21	4	4	2	3
22	4	5	1	4
23	5	6	0	4
24	4	3	3	4
25	4	4	2	3
26	4	4	4	3
27	4	4	4	4

Source: Research findings

The sample size was 27 respondents (students of the same study group). The sampling of a group of students from a variety of groups at the university was simple and random. The sample of students is homogeneous in their intelligence levels and age. To identify the degree of impact the components of formedness of students' readiness for self-organization have on each other, correlation analysis was carried out. The correlation analysis matrix is presented in Table 4.

Table 4
Correlation Matrix (N = 27, p <0.05)

Variables	Skill 1	Skill 2	Skill 3	Performance
Skill 1	0,98	0,56	0,46	0,62*

Skill 2	0,56	0,98	0,83*	0,75*
Skill 3	0.46	0,81*	0,98	0,74*
Performance	0,62*	0,75*	0,74*	0,98

Source: Research findings

At a significance level of $p < 0.05$, it can be concluded that Skill 2 and Skill 3 are positively correlated. It can be also concluded that with a high level of formedness of a student's ability for competence self-assessment, the student is able to choose individual tasks and successfully complete them. In addition, all the three skills are positively correlated with the average student performance. Given the value of the correlation coefficients, it can be concluded that after the experiment, successful academic performance indicators are significantly affected by the ability for self-assessment of certain competences, taking into account self-improvement tasks, as well as a student's willingness to choose and perform "free" tasks.

According to the results of statistical tables, multiple regression equation $P =$ was obtained where P is the academic performance (the predominant examination grade throughout a student's training period); the characteristics of parameters skill_1 (X_1), skill_2 (X_2), skill_3 (X_3) are presented in Table 3.

Let us consider the resulting equation $P = 2.270 + 0.299X_1 + 0.278X_2 + 0.380X_3$; $p < 0,05$.

The following interpretation of the model parameters is possible: an increase in X_1 by one unit of measurement leads to an increase in P by an average of 0.299 units of measurement; an increase in X_2 by one unit of measurement leads to an increase in P by an average of 0.278 units of measurement; an increase in X_3 by one unit of measurement leads to an increase in P by an average of 0.380 units of measurement.

Based on these results, it can be stated that the specially designed set of tasks introduced into the rating contributes to the formation of readiness for self-organization in students.

A control group was not sampled and compared, since the work is a description of the author's experience. The focus was maintained on designing the types of tasks aimed at developing readiness for self-organization in students.

4. Discussion

Possible risks and ways to minimize (or eliminate) them are suggested. As a matter of convenience, they are presented in Table 5.

Table 5
Possible Risks and Ways to Minimize (or Eliminate) Them

Risks	Ways to Minimize Them	Remarks
Students may take a formalist approach to self-assessment and peer assessment of competences.	Assessment indicators of a work specify its performance standards. The assessment indicators and the fact that underperformed work will be remitted for revision are communicated to students. One of the competences is analyzed together with students prior to that.	Experience has proven that students have difficulty performing the work for the first time. In the subsequent trimester, the results demonstrated are better.
When choosing a content and form for their work, a student can deliver what they have	A finalized work is subject to plagiarism checking (first by the student themselves, then by the teacher). There	

found on the Internet.	are clear requirements for the share of originality and matching content from one source.	
Students may refuse to perform "free" tasks, since they can score well enough to pass even without them	The principle of voluntariness is strictly respected. The teacher can only advise and direct a student's attention to having something to prepare.	For a range of reasons (including a student being engaged in other activities, such as a job or extracurricular activities), there are students who knowingly pass with threshold results (satisfactory scholarship would suffice for them).
Students may object to participating in competitions within other organizations and to preparing reports for conferences and publications due to the fact that they are fee-based.	A student is given the right to choose whether to send their work somewhere or defend it in front of the group. The teacher offers students a variety of activities, some of them being free of charge. A student can also find such an event by themselves. The principle of voluntariness is strictly observed: the teacher offers to everyone.	Participation of first 1-2 students works as a good incentive. After they receive diplomas or certificates that are conferred in front the group, the others also start wanting to participate.

Source: Compiled by the authors

The description of possible risks and ways to minimize them will allow those wishing to engage into the work described above. In this case, the experience presented in the guidance paper can be taken into account.

What this paper means by readiness for self-organization is the need and the ability of a student to carry out a structured conscious activity on organizing and managing their independent work.

The following were selected as characteristics of readiness for self-organization:

- the ability to plan one's independent work in the rating mode and to meet the deadlines;
- the ability for self-assessment of certain competences and for self-improvement task statement;
- the readiness to choose and perform "free" tasks.

To form readiness for self-organization (through the example of instructional subjects) in pedagogical students (majored in Mathematics and Economics), it is proposed to use the following types of tasks:

- self-assessment and peer assessment of competences with self-improvement task statement;
- preparation and defense of summaries and guidance papers (compendia of lectures, extracurricular activities, programs, etc.);
- leaving the actual content and form of guidance papers, the final paper, and projects to the discretion of a student (subject to the condition that the student should demonstrate a certain set of competences while preparing and defending their papers);
- including the possibility for a student to choose their tasks (for individual work), that is, the so-called "free" tasks, in the rating assessment of activities.

The following criteria were considered as performance criteria for the types of tasks used: the formedness of readiness for self-organization in students; improving the effectiveness of participation of the students from these groups in competitions, conferences, preparation of publications, etc. They were introduced at the SSPI branch of the PSU.

The conducted work has yielded positive results. At the end of the training courses, students

were divided up by the formedness levels of readiness for self-organization as follows: high level – 45.4%; average – 36.4%; low – 18.2%.

Based on the above results, it can be stated that the set of specially designed tasks introduced into the rating has contributed to the formation of readiness for self-organization in students. The work has a positive effect.

5. Conclusions

The proposed work gives an operational definition the concept of readiness for self-organization, describes it and analyzes the relevant literature. Readiness for self-organization includes the following:

- the ability to plan one's independent work in the rating mode and to meet the deadlines;
- the ability for self-assessment of certain competences and for self-improvement task statement;
- the readiness to choose and perform "free" tasks.

Based on the outlined characteristics of readiness for self-organization, the types of tasks were identified. The introduction of the developed types of tasks into work with pedagogical students (majored in Mathematics and Economics) (through the example of instructional subjects) was described. Performance criteria and indicators were identified and the measurement results were presented. Possible risks and ways of minimizing them when using the proposed types of tasks aimed at developing students' readiness for self-organization were identified.

Thus, to form readiness for self-organization in pedagogical students (majored in Mathematics and Economics) (through the example of instructional subjects), the following types of tasks can be used: self-assessment and peer assessment of competences with self-improvement task statement; preparation and defense of summaries and guidance papers (compendia of lectures, extracurricular activities, programs, etc.); tasks for students to choose an actual content and a form for their guidance papers, final papers, and projects (subject to the condition that a student should demonstrate a certain set of competences during the preparation and defense of their research); to include in a performance assessment rating the possibility for a student to choose a task (individual work).

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