

Teaching and Learning Skills in the Organization of Distance Learning in Higher Education Institutions

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ABSTRACT

During distance learning, the roles of teachers and students inevitably change in comparison with the usual format of classes. Students are forced to carry out more work independently, without direct instructions from the teacher, which requires the formation of not only learning, but also self-learning skills, as well as the readiness to apply them. Based on the theory of independent learning activities and the theory of competency-based approach to learning, this study aims to analyze the experience of distance learning in March-June 2020 from the point of view of how the functions of teachers and students are redistributed, to identify a possible lack in the formation of self-learning skills among students and to outline ways to fill it.

Keywords: *independent educational activity, distance learning, universal competencies, teacher's functions, student's functions, competency-based approach*

1. INTRODUCTION

The coronavirus pandemic has become a powerful incentive for the teaching community to intensify the search for forms and content of training that could replace traditional contact classes. The situation was complicated by the lack of time to prepare and test methodological ideas, teachers in all educational institutions tried to find ways and strategies for effective distance teaching and learning. Today, the empirical experience that was collected during a forced mass experiment requires methodological understanding and analysis of successes and failures, as well as their causes.

The educational process includes two sides: the educator and the learner, each of whom performs certain functions of teaching and learning. Different learning formats involve a different division of these functions between the teacher and students, and the result directly depends on how well the teaching and learning processes are organized. It is obvious that the format of distance learning involves a change in the role of teachers and students in comparison with contact training, but the question remains whether participants in the educational process are ready and able to restructure their normal activities.

This article is devoted to the analysis of the difficulties faced by both sides related to the correct distribution and performance of teaching and learning functions, which will help to determine the shortcomings of their formation and to outline ways of purposeful teaching of the necessary skills.

In this work, we understand teaching functions as the functions of the teacher (teacher's functions), and learning functions as the functions of the students themselves (student's functions).

1.1. Related Work

The research theme is based on the theory of independent learning activities and the theory of competency-based approach to learning, which will make it possible to correlate the requirements of educational standards with teaching and learning skills that provide effective distance learning, as well as to identify specific teaching and learning activities that should be the object of subsequent training.

1.1.1. Theory of independent learning activities

Issues of developing students' independence are discussed at all levels of education, and in general, we can say that researchers consider two areas of problems: first, when students perform educational activities without the participation of a teacher (that is called independent work or doing homework), and, second, when it comes to the ability to organize educational activities that are distributed among participants in the educational process. In the context of the second approach, it is said that "the student should gradually adopt the functions of the organizer, deepening the level of independence" [2, p.68], i.e. independence is considered in development, "the gradual increase in the share of independence in the work of students is taken into account, which allows the student to move to the level of self-learning later" [4, p. 25].

Special attention should be paid to the research of I. A. Giniatullin's scientific and methodological school, which is based on the concept of cognitive independence, the essence of which "is most fully manifested in the student's ability to manage their cognitive activity" [1, p. 11]. The

author notes the importance of identifying and specifying those actions that should become the object of formation, so that partially independent educational actions with increasing independence pass into the status of truly independent educational actions of students, calling the complex of such actions “a methodological component of independent educational activity” [1, p. 31].

Levels in accordance with the degree of independence can become the organizational basis for such learning, for example, the levels of a proactive student (they choose goals, methods, techniques themselves, and exercise self-control) or reactive (with a given direction, they can choose the means to achieve the goal) [8] or the level of a dependent / independent student [7].

In other words, building a methodological system for preparing students for high-quality performance of educational functions, as well as forming their readiness to adopt a number of teaching functions, requires identifying the skills themselves, as well as determining those skills that cause the greatest difficulty.

This idea is supported by other researchers, for example, in the theory of self-regulated teaching, which assumes the formation of special educational strategies as the basis for independent teaching [12], and B. Landrum shows the relationship between the ability to apply self-control strategies and the effectiveness of teaching in the process of taking online courses [10].

The model of training a self-regulated student is also presented in the work of B. Zimmermann. Learning is viewed as an activity that students do for themselves in a proactive way rather than as a covert event that happens to them in reaction to teaching”, at the same time, among the key skills of a student who is able to regulate their learning process independently (“self-regulated learner”) the author calls the ability to set goals, manage their time, apply different learning strategies, motivate themselves to achieve the goal [13].

In the European tradition, they talk about autonomous learning and the concept of educational autonomy [9, 11], the analysis of which shows similarities with the given examples. Ultimately, the researchers argue that targeted training in the implementation of special actions will contribute to the readiness of students for effective distance learning, in which the role of the teacher will be reduced to determining the overall strategies of the educational route, and the student learns to make decisions on its development independently.

1.1.2. Competency-based approach in the system of higher education

The organization of learning in Russian universities is characterized by the implementation of a competency-based approach, which involves the formation of a number of competencies in students. Modern Federal state educational standards of higher education contain universal and general professional competencies that determine the selection of the content and forms of the

entire educational program. Within the framework of the research, the universal ones are of particular interest, since they focus on the development of students’ independence in mastering disciplines and in the future implementation of professional activities in general.

As an example, let’s consider the Federal state educational standard “44.03.05 Pedagogical education” [6]. Four competencies from the “universal” section are directly related to the concept of “independence”, namely: UC-1 - the learner is able to search, analyze information critically and synthesize it, apply a systematic approach to solving problems; UC-2 - the learner is able to determine the range of tasks within the set goal and choose the best ways to solve them, based on current legal norms, available resources and restrictions; UC-6 - the student is able to manage his or her time, build and implement a trajectory of self-development based on the principles of education throughout life; UC-7 - the student is able to maintain the proper level of physical shape to ensure full-fledged social and professional activities.

To clarify the content of competencies, it is customary to decompose them at different levels, and this is also related to the issue of differences between the concepts of “competency” and “competence”. Competency is more often understood as a certain requirement (competencies in the educational standard), and competence is considered as “a set of personal qualities of a student (value-semantic orientations, knowledge, skills, abilities)” [5, p. 241].

Another point of view is presented in the concept of the author’s group of A. K. Kolesnikov, A. I. Sannikova and K. E. Bezukladnikov, who, having presented a deep analysis of the problem, interpret the discussed concepts in a professional context and by a professional competency they understand “a psychological formation, which includes, along with cognitive and behavioral aspects, long-term readiness for professional activities as an integrative quality of the individual” [3, p.61].

In this work, we purposefully do not separate these concepts, but rely on the development of colleagues and to clarify the content of the educational standard competencies, we highlight such components as knowledge, skills, abilities and personal qualities. These structural units, in our opinion, are the most relevant for evaluating the performance of the educational process participants in implementing teaching and learning functions during the pandemic.

1.2. Our Contribution

By decomposing universal competencies relevant to the theme, more narrowly focused components are identified, and they are necessary for the formation of students’ ability to regulate their learning process independently (“self-regulated learning”). The analysis presented in this work proves that these components can be empirically measured; therefore, it is possible to develop clear criteria for them and build work to overcome the lack of skills formation according to any indicator. In general, this work is aimed at redistributing teaching and learning functions

in order to increase the share of students' independence, which will increase their readiness for effective distance learning.

2. METHODS OF RESEARCH

2.1. Decomposition of formed educational competencies

To check the level of competencies formation, we identified their components.

UC-1. The student must:

- know the principles of a systematic approach, the principles of information selection;
- have the skills in working with various sources of information;
- be able to analyze and synthesize, find relations between parts of a single whole, and rethink the information received critically;
- be responsible, ready for independent search and analysis of information, have critical thinking.

UC-2. The student must:

- know the current legal norms, principles of a systematic approach;
- possess planning skills;
- be able to divide a complex whole into components, develop a plan / algorithm for completing tasks, choose the best ways to solve problems, and choose the format for completing tasks;
- be responsible, self-disciplined, and ready to make their own decisions.

UC-6. The student must:

- know the periods of upsurge and fall-down of activity during the day, the basics of time management, and the principles of lifelong education;
- have the skills in managing time, making a daily routine, alternate work and rest;
- be able to work without external control, develop personal trajectories of self-development and self-education;
- be responsible, self-disciplined, punctual, motivated to gain new knowledge and enrich their experience.

UC-7. The student must:

- know the principles of a healthy lifestyle, ways / resources to increase physical activity;
- have the skills in planning, alternating between mental work and active recreation;
- be able to use available resources to maintain good physical shape;
- be self-disciplined, active, motivated to maintain good physical shape and a healthy lifestyle, ready to take responsibility for their health and physical condition, have willpower.

As one can see, many components of these competencies are repeated and can be combined according to the principle of importance for ensuring the student's independence (see Table 1).

Table 1 The components of the competencies that ensure the independence of the student

Knowledge	principles of a systematic approach, principles of information selection, current legal norms in the field of their activities, periods of upsurge and fall-down activity during the day, the basics of time management, principles of lifelong education, principles of a healthy lifestyle, ways / resources to increase physical activity
Skills	working with various sources of information, planning, setting up a daily routine, alternating between work and rest (including alternating between mental work and active rest)
Abilities	performing analysis and synthesis, critical rethinking of the information received; finding relations between parts of a single whole, dividing a complex whole into components, developing a plan / algorithm for completing tasks, choosing the best ways to solve problems, and choosing the format for completing tasks; working without external control, developing personal trajectories of self-development and self-education, using available resources to maintain good physical shape
Personal qualities	responsibility (including for your health and physical condition), self-discipline, punctuality, critical thinking, activeness, readiness to search and analyze information independently, readiness to make decisions independently, motivation to gain new knowledge and enrich your experience, motivation to maintain good physical shape and a healthy lifestyle, willpower

Thus, the selected knowledge, skills, abilities and qualities of the individual can be considered as elements of students' independence, and at a high level of their formation they will allow us to say that the student is quite independent in his or her activities, is able not only to perform all the necessary educational functions, but also partially - teaching functions (in this case, self-learning).

2.2. Development of questionnaires for students and teachers

The decomposition of competencies and the identification of the main elements of the formation of students' independence is the basis for the development of questionnaires for students and teachers, so that the respondents can reflect on the academic period during the pandemic from March to June 2020.

The students evaluate their expectations and the reality that they encountered during the period of distance learning, how optimally they were able to solve the issues of time planning, selection of material for work. Special attention is paid to the factors that contributed to or hindered successful distance learning.

As aspects for understanding, the teachers are offered positions for assessing students' satisfaction with the results of their work in general and the level of formation of individual skills. Both groups of respondents were asked to analyze teaching and learning functions, as well as to express their opinion on the readiness to adopt a number of teaching functions by the students and on the readiness to delegate these functions by the teachers.

2.3. The analysis of results, identification of deficiencies

Questionnaires presented in the format of Google tests were sent to the teachers and the students. The automatically collected data served as the basis for analyzing and identifying those skills that were formed at an insufficient level and became factors that inhibit the acquisition of disciplines in a remote format.

The identified deficits can be considered as aspects of a targeted methodology for their formation to increase the level of students' academic independence.

3. RESULTS

According to the above mentioned provisions on the competency-based approach to the organization of higher education, we used universal competencies that are associated with the formation of students' independence as a basis for conducting research. The decomposition of these competencies is carried out taking into account the identification of teaching and learning functions that ensure the implementation of the educational process.

The survey was attended by 314 students from various universities and various fields (Ural State Pedagogical University, the Ural Federal University, Russian Professional Pedagogical University, Institute of international relations).

The first thing that the survey participants were asked to evaluate is the expectation and reality regarding the increase / decrease in the amount of free time during distance learning. 255 respondents (81.2%) expected more free time, 59 respondents (18.8%) were ready to reduce it.

However, only 136 students (43.3%) actually had an increase in their free time, while the remaining 178 (56.7%) admitted that their free time had decreased.

When asked whether it was easy to plan the day and choose the time for classes, 197 respondents (62.7%) answered positively, 117 (37.3%) - negatively. The respondents could choose several of the suggested factors that contribute to or complicate time planning. Among the positive ones, many indicated the ability to manage their own time (129 respondents, 41.1%), while 60 students (19.1% of the respondents) recognized that they need external time control factors for successful planning. The second most common positive factor was the statement that it is easier to alternate work with rest at home (117 students, 37.3%). However, at the same time, 86 respondents (27.4%) noted home conditions as hindering planning, since there are many factors at home that distract them from work. 99 students (31.5%) said that they knew their own periods of greatest activity during the day and had the opportunity to choose them for work without having to attend the university, which made it easier to draw up a lesson. The lack of ability to find the most productive periods for work was recognized by 21 respondents (6.7%). 78 respondents (24.8%) have a constant habit of planning their own time, regardless of the form of training, while 24 respondents (7.6%) do not have such a habit.

In addition, in the "other" column, 7 students (2.2%) noted that sudden rescheduling of classes or holding them at a time that does not coincide with the time specified in the schedule, as well as the fact that some teachers could send a task at any time of the day, complicate time planning. 3 respondents (1%) noted a large volume of tasks.

Next, the students were asked to rate how easy it was for them to complete tasks while on distance learning, and indicate the reasons. 171 respondents (54.4%) chose the option "easy rather than difficult". This was explained by the fact that there was more freedom in choosing the format of tasks (86 students, 27.4%), clear instructions were provided (84 respondents, 26.7%), constant communication with teachers with the opportunity to ask questions and get explanations (82 respondents, 26.1%), it was interesting to search for material independently instead of being limited to notes (62 students, 19.7%).

143 respondents (45.6%) chose the option "more difficult than easy" to complete tasks. The reasons were the following: lack of clear instructions (96 respondents, 30.6%), lack of communication with teachers, inability to clarify confusing tasks (94 students, 30%), difficulty in choosing the task format if it is not set by the teacher (44 students, 14%), the need to search for material independently instead of relying on notes made in the classroom (105 respondents, 33.4%).

In addition to the survey of students, a survey of teachers was conducted, in which 43 respondents took part. 18.6% are completely satisfied with the work of their students during the distance learning period, 58.1% are rather satisfied, 20.9% are rather dissatisfied, and 2.3% are absolutely dissatisfied. The reasons for the positive assessment of students' work were the completion of tasks

on time (60.5%, 26 respondents), the ability and readiness of students to work independently within the set goal (53.5%, 23 teachers), a good level of knowledge detected during the current control, which differs little from that in the usual format of classes (9 respondents, 20.9%), the creative approach of students to completing tasks (6 respondents, 13.9%), the use of additional, independently selected material for solving the task (7 teachers, 16.3%). The teachers explained the negative assessment of students' work during distance learning as follows: completing tasks late (9.3%, 4 respondents), students' unwillingness / inability to work independently within the set goal (13.9%, 6 teachers). 7% of the respondents (3 respondents) noted a decrease in the level of knowledge of students compared to that in the usual format of classes, 4.6% (2 respondents) indicated that students asked to provide specific material for study because they were not able to select it themselves, and 2.3% (1 respondent) noted students' requests to provide clear instructions for completing tasks, without which they were also unable to work.

Of particular interest are the questions that are the same in both questionnaires. Both students and teachers were asked to indicate which functions from the proposed list, in their opinion, should be performed by the teacher during distance training, and which ones should be performed by the student himself. The list includes the following features:

1. the wording of the problem,
2. formulation / specification of the task,
3. splitting a complex task into components with a clear task for each of them,
4. setting the deadline for completing a complex task,
5. setting deadlines for each component of a complex task,
6. selecting sources / resources for completing the task,
7. development of the task execution plan/ algorithm,
8. development of the reporting form,
9. control of the correct execution,
10. analysis of the work.

The results obtained on the above mentioned issues are presented in Fig. 1 and 2.

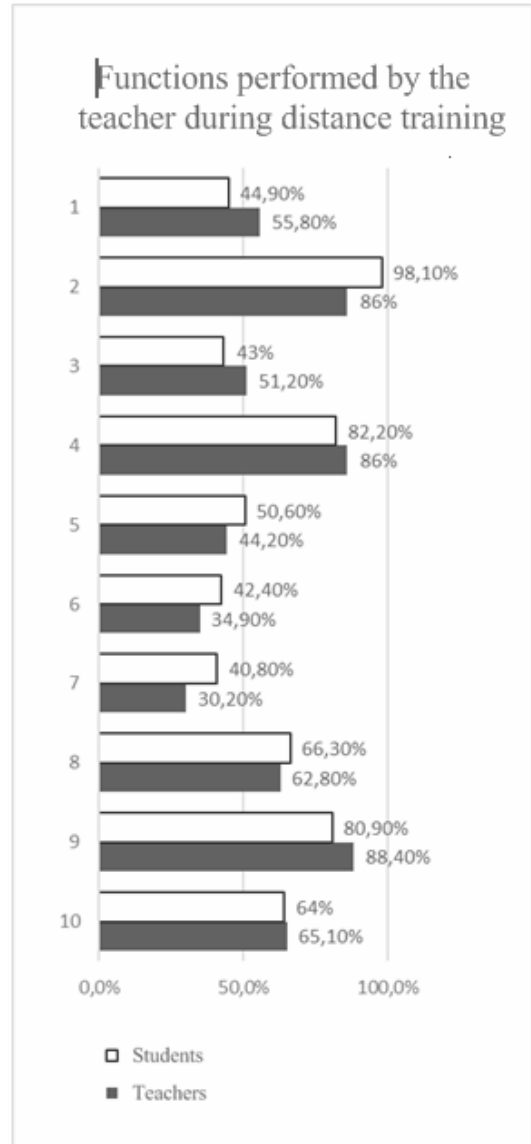


Figure 1 Comparison of the respondents' answers about the functions performed by the teacher

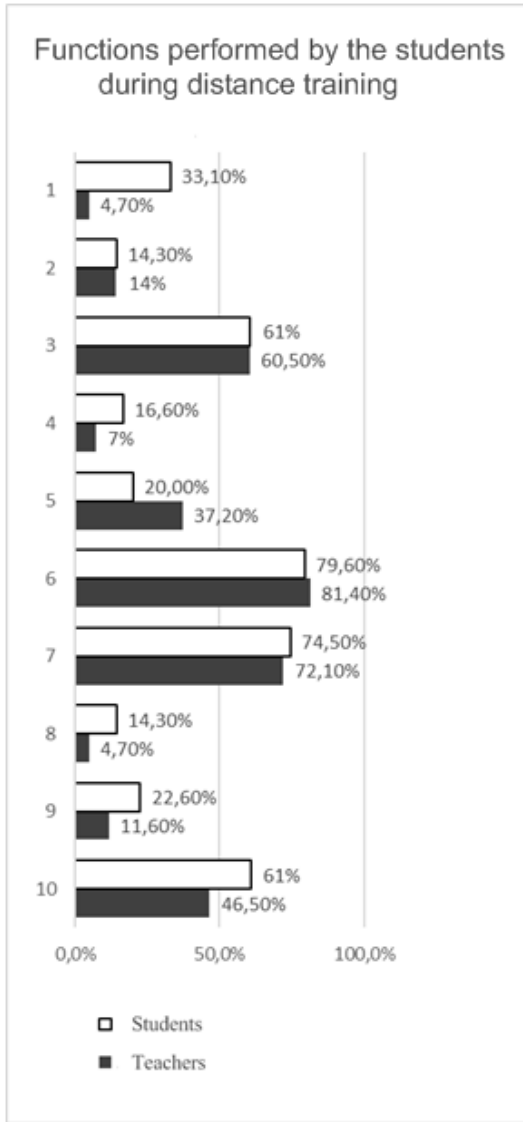


Figure 2 Comparison of the respondents' answers about the functions performed by the students

In addition, both groups were asked to identify teaching functions that they are willing to assume (students) / delegate to students (teachers). The comparison of the respondents' opinions is shown in Fig. 3. 8 respondents (2.5%) are not ready to take on teaching functions at all, of which 1 person even called this question "strange". There were no teachers who were not willing to delegate some of their functions to students.

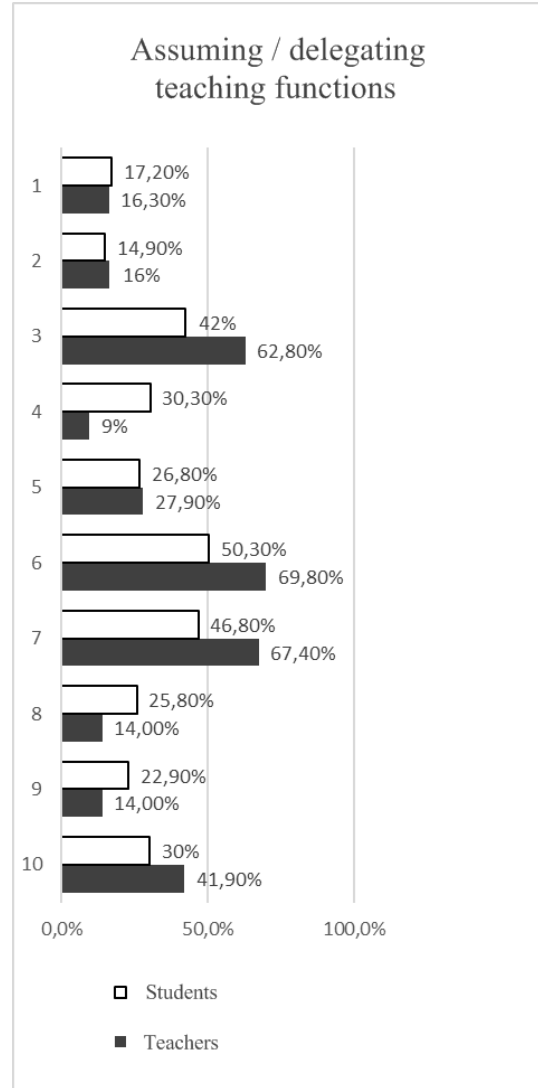


Figure 3 Comparison of the respondents' answers about assuming (students) / delegating (teachers) teaching functions

In general, for successful distance learning, the following things were important for students: to have a clearly formulated task (310 respondents, 98.7%), to have a complete overview of all the tasks for the semester (172 respondents, 54.8%), to get an algorithm for completing the task (148 students, 47.1%), to receive tasks in "small portions" regularly (161 students, 51.2%), to receive a complex task and be able to "split" it into separate tasks independently (125 respondents, 39.8%), to have clear deadlines for presenting each part of the task (227 students, 72.3%), to have the freedom to choose the time of completing the tasks and presenting the results (154 students, 49%), to have a list of recommended sources / resources (178 students, 56.7%), to have the freedom to select sources / resources (132 respondents, 42%), to be able to present the results in a free form (124 students, 39.5%), to receive regular feedback on the correctness of

the tasks (257 respondents, 81.8%), not to be restricted in the aspect of task disclosure (106 respondents, 33.8%).

At the end of the questionnaire, the students were asked to evaluate the formation of the following skills on a five-point scale:

1. I can manage my time;
2. I keep myself in good physical shape and monitor my health;
3. I can independently define tasks within the set goal and choose ways to solve them;
4. I can independently search for and synthesize information needed to complete tasks

The results are shown in Table 2.

Table 2 Self-assessment of the students' formation of universal competencies (as a percentage of the total number of responses)

Competencies / points	1	2	3	4
1	4,1	10,1	1,6	1,9
2	6,7	15,9	7	6
3	22	30,6	24,2	20,4
4	44,6	27	47,5	40,4
5	37,9	31,5	35	46,5

The teachers were also asked to evaluate on a five-point scale the formation of their students' skills related to the independence of learning, namely:

1. to determine the tasks in the framework of the goal;
2. to choose the ways of solving the assigned tasks;
3. to select resources for completing the task independently;
4. to search for information;
5. to carry out analysis and synthesis of information;
6. to make a task completion plan;
7. to choose the appropriate form of execution for the task independently.

The results are shown in Table 3.

Table 3 The teachers' assessment of independent learning skills (as a percentage of the total number of responses)

Skills / points	1	2	3	4	5	6	7
1	2,3	0	2,3	0	2,3	2,3	2,3
2	2,3	4,7	11,6	4,7	11,6	14	7
3	44,2	34,9	32,6	25,6	41,9	46,5	27,9
4	44,2	51,2	39,5	39,5	34,9	30,2	53,5
5	7	9,3	14	30,2	9,3	7	9,3

The collected empirical material allows us to conduct analysis in various directions depending on the goal. In our case, the purpose of the study was to determine the readiness of students to engage in distance learning,

readiness to perform not only learning functions, but also to adopt teaching (self-learning) ones.

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4. CONCLUSION

Based on the data obtained from the questionnaires, we were able to build a picture of distance learning during the period of forced quarantine. The students showed themselves to be subjects of learning, that almost without problems cope with the issues of time management, in addition, in their opinion, distance learning has a number of advantages, since it is possible to alternate activities, choose the most favorable periods for work. The same result was noted by teachers, most of the works were presented on time.

Deficits that are worth paying attention to are students' inability to work with information and lack of regulatory functions related to setting goals, searching and processing information. Students expect clear instructions from teachers, step-by-step instructions on the content and form of work.

The understanding of the identified deficiencies is becoming an important starting point for the development of targeted training. Such training should be of particular importance in pedagogical universities, since, having learned by themselves, future teachers will be able to transmit these skills to their students, preparing them for effective distance learning. As a perspective, we consider the development and testing of a special course integrated into methodological disciplines, which will increase the level of independence of students and teach them to perform not only learning, but also teaching (self-learning) functions.

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