Organizing Students' Independent Work: An Approach for Graduate and Undergraduate Students

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Abstract. In the modern educational process, the proportion of independent work for students increases. The aim of this study is to develop an approach to organizing student work based on their level of education (bachelor's or master's). Creating a new approach based on the level of learning is important because it will improve the quality of independent work of students and increase their level of motivation for independent learning. A survey study was carried out among 210 bachelor's students (second year) and 60 master's students (first year) to determine their preferences towards the structure and types of independent work and its assessment. (The total number of respondents were 270.) Respondents were selected based on their level of education. A total of 76 lecturers were also selected to take part in the study. In this paper, we describe an approach to organizing student independent work based on the survey results. We found that the independent work of undergraduate students consisted of working with given materials (80%) and literature searches (20%). Most of the lecturer respondents considered work with ready-to-use educational materials to be the most favorable for bachelor's students (70%), with much fewer considering independent or mixed work to be more effective (8% and 22%, respectively). The final module testing includes the questions addressed in the classroom and the topics students studied independently. The practical significance is that the developed approach to organizing student independent work can be used by any institution of higher education within the Bologna Process.

Keywords: higher education institution; independent work; methods of independent work

1. Introduction

New trends, progress, and shifting principles affect educational systems all over the world. Today, the world's educational systems are aimed at continuous improvement and self-development. It is not enough to learn once; it is necessary to develop skills throughout life, as progress happens quickly. Around the world, education has adopted a focus on the self-development of the student, which is achieved by increasing the proportion of independent work in the learning process.

Education in Great Britain is based on the principle of lifelong learning, which is based on competence, personal development, and competitiveness. Each person should directly participate in the political, cultural, and social life of the country (Kogan, 2000).

Students studying at higher education institutions in Germany spend more time studying independently than under supervision (Wu, 2017). In general, they spend around 20 hours studying in the classroom per week. In-class lessons provide only the basics, while the depth of the issue is studied independently by the student. Similarly, countries such as the United States and Japan allocate about 50–60% of the work plan to the student's independent work.

The issue of organizing students' independent work has also been identified in Brazil since higher educational institutions are actively introducing distance education technologies (Da Silva et al., 2019). Studies conducted by Brazilian scientists have shown the interest of students in and the effectiveness of new distance technologies, which contribute to personal development and better learning.

Malaysian scholars have emphasized the importance of professional development and the reorganization of faculty work in improving the quality of independent activity. A motivated faculty member is more inclined to and interested in scholarly progress, which ultimately affects the quality of their work. A teacher who knows the latest advancements in their field or even contributes to the advancements is better at delivering information to students, both in and outside the classroom. As a result, students perform better and raise the rating of their educational institution. Therefore, the concept of high-quality higher education based on high-quality independent work begins with teacher motivation (Salim et al., 2010).

Whatever approaches are adopted by different countries to improve education, their main goal is to provide quality education to the student. The main component of such education is self-learning through independent work.

Today, the main task of the Russian higher education system is to train qualified specialists with professional competencies and the capacity for self-development. Students' knowledge is evaluated through the acquired competencies according to the specialty standard. However, it is impossible to design students' independent work without the participation of the students themselves and

considering their level of education (bachelor's or master's). Therefore, it is relevant to study the organization of students' independent work taking into account their educational level.

Many researchers have paid attention to the problem of students' independent work organization, focusing on the importance of internet technologies in the educational process (Aminov & Khodzhaieva, 2017; Fedorova, 2016; Garieev et al., 2018). However, independent work organization based on educational level has not been studied enough, which adds novelty to this study. The study is also novel in that there is a need to review traditional teaching methods at the university and offer new methodological approaches using modern technologies that optimize the educational process and increase students' motivation to work independently and search for teaching materials without lecturers. Modern scientific works have confirmed the novelty of the study regarding the peculiarities of students' independent work in various aspects (Leushin & Leushina, 2017; Sviridova & Timoshenko, 2018). The difference in views on the issue of student independent work is to turn to different methodological approaches (traditional and modern). In addition, the difference is explained by the level of readiness to increase the proportion of independent work of students and opportunities for its implementation. Our own approach takes the position of increasing the level of motivation of students to do independent work and opportunities for its implementation with the help of modern technologies. Thus, our specific research problem is based on the need to develop an approach to independent work of students in a modern educational process created on the basis of modern technologies.

2. Literature Review

In the modern educational process, there is a need to develop new methodological approaches to student independent work. These approaches can be used in any institution of higher education within the Bologna Process, which involves reforming higher education systems to create favorable conditions for the educational process using modern methods and approaches to education (Kaçaniku, 2020). Many international researchers have raised the issue of students' independent work organization. Previous research has indicated the role of independent work in developing communicative-interactive competence (Sali, 2017; Shevchuk et al., 2018), its importance in developing self-organization and self-management skills (Abilkhamitkyzy et al., 2014; Ualiyeva & Murzalinova, 2016), and the need for a new model of independent work organization that considers numerous factors that can affect students' individual learning (Soliyeva, 2017). The potential gaps in the field relate to lack of a unified methodological approach to the implementation of independent work of students, and the use of modern technologies and innovations.

The field is based on the works of both foreign and national researchers who analyzed various aspects of students' independent work in the modern educational process and whose works are important for understanding the problematic issue of student independent work. Many international authors have highlighted the importance of internet resources in the organization of student

independent work (Gray et al., 2019; Naik et al., 2020; Parikh & Verma, 2002). They consider the importance of the ever-increasing volume of information, changes of the individual learning trajectory, and growing mobility, namely unlimited opportunities for independent study in terms of time and place.

An indispensable skill for a future specialist is the ability to work with information and to think critically, which can be developed through working with internet resources (Gray et al., 2019; Medeiros et al., 2019; Naik et al., 2020). Nowadays, science and new technologies have a significant impact on the socio-economic development of all countries, and the level of development of each country is determined by the availability of advanced information technologies (Klochkova et al., 2019). The importance of modern technology has been stressed in the works of both foreign and national researchers (Pushkina, 2011; Ualiyeva et al., 2016). Students entering and studying at institutions of higher education today belong to the so-called Generation Z. These students have an excellent command of modern technology and easily master information online. Thanks to special electronic training programs, students can watch video lectures, work with scientific literature, write essays, make presentations, take surveys and tests, master courses, and even do practical classes. Aminov and Khodzhaieva (2017) pointed out that with this technology, information can be stored indefinitely, edited at any time, and used for interactive learning.

One of the promising areas in improving the independent work of students is blogging using special software that can analyze and edit information (Garieev et al., 2018). The most critical problem is the control of the information that students master through independent study. The introduction of the modular rating system of learning encourages students to study because of its clear differentiation of grades and minimization of the subjective influence of the lecturer. This approach improves the quality of learning and engages students in independent work (Sviridova & Timoshenko, 2018).

Leushin and Leushina (2017) recommended differentiating students' independent work based on their level of basic training. It is assumed that graduates of gymnasiums or lyceums who studied according to a certain program should have an equal share of classroom and independent hours. On the contrary, other students should have more in-class hours. This approach is explained by the fact that better prepared students can handle 50% of the activities undertaken as independent work, while students with no experience in specific subjects must first learn the basics in the classroom.

The issue of organizing independent work is a topic of discussion in many countries, including Russia. The application of modern technology to education and online learning is very relevant. Sviridova and Timoshenko (2018) discussed the evaluation of independent work with the help of the modular rating system. Other studies have explored the necessity of differentiating the amount of independent work based on students' level of training (Leushin & Leushina, 2017) and the importance of an integrated system for managing the learning process (Ostapenko & Plekhova, 2018). Thus, the most relevant and important aspects of

the scientific literature are represented by the peculiarities of independent student work, the problem of using modern technologies in independent student work, and using new methodological approaches in independent student work.

3. Problem Statement

The development of a new approach to the organization of independent work by students emerged in connection with the need to reorient work plans to consider the students' level of training. Classroom hours should be reduced in favor of independent studies without losing the quality of education. Independent student work should be supported by all methodological developments. Through independent work, students are subject to learning to organize their own activities effectively and efficiently. This includes planning their work, understanding the system of tasks, distinguishing the main from the secondary, adjusting their independent work, analyzing the results, and identifying shortcomings and developing ways to address them. Thus, gaps in previous research are related to the lack of new methodological approaches to the implementation of independent student work and the need to revise curricula and develop new methods based on student practice and independent work (Leushin & Leushina, 2017; Sviridova & Timoshenko, 2018).

Hence, the aim of this study is to develop an approach for organizing student work considering their level of education (bachelor's or master's). The objectives of the study are to: conduct a survey among undergraduate and graduate students on their vision of independent work in terms of its structure, type, and form convenient for them; and conduct a survey among lecturers of undergraduate and graduate students on their vision of student independent work as to its structure, type, and form useful for them.

4. Method

The research was based on the methodological concepts introduced by these researchers: Gheorge (2016) and Sofronova and Nikulina (2019). The study presents descriptive statistics to establish certain evidence, namely the preferences of bachelor's and master's students regarding the preferred structure, type, and form of independent work. The practical purpose of the work is to establish the percentage of students who prefer various types of independent work, and does not involve any more complex forms of statistical research. The results of this study will themselves be the basis for further research in this area.

4.1. Materials

The study was conducted at two Moscow universities (State University of Management and Far Eastern Federal University) and at the Elabuga Institute (branch) of Kazan (Volga Region) Federal University. Since the aim of this research was to develop an approach to organizing students' independent work based on their level of education, the first step was to randomly survey students. The participating second-year bachelor's students were surveyed during the second semester of 2020, whereas the first-year master's students were surveyed during the first semester of the same year. The randomly selected undergraduate and graduate students were divided into two groups: group 1 included the

bachelor's students and group 2 the master's students (see Table 1). The survey was conducted specifically among undergraduate and graduate students because these categories of students have a different vision of independent work due to their level of education. Second-year bachelor's students were selected because they will have already possessed knowledge of basic concepts about such types of work as independent work. First-year master's students will have already formed their opinion during the previous years of study.

Table 1. Criteria for sampling respondents

Criterion	Group 1 (n)		Group 2 (n)	
Level of study	Bachelor's	210	Master's	60
Gender	Male	105	Male	30
	Female	105	Female	30

At the same time, we conducted a similar study among lecturers to determine their opinion on the effectiveness of different forms of independent work based on their observations and practical experience. Lecturers from the same two universities in Moscow (State University of Management and Far Eastern Federal University) and the Elabuga Institute (branch) of Kazan (Volga Region) Federal University were invited to take part in the study, and included mostly those who taught classes to students who participated in the survey. A total of 76 lecturers were invited across the three institutions, and included 39 females and 37 males.

The survey was conducted through a written questionnaire, with students from different courses responding to the survey. The lecturer survey was conducted as an individualized questionnaire. The questionnaire was completed by the lecturers themselves at a time convenient to them.

The survey consisted of closed-ended questions aimed at understanding the students' and lecturers' attitude towards independent work (see Table 2).

Table 2. Survey questions

	Student respondents	Lecturer respondents
Survey questions	What structure of independent work do you think is the most fitting?	What structure of independent work do you think is the most appropriate for the students?
	What form of independent work would you like to use in independent study?	What types of independent work would you like to use?
	What types of assessment do you consider most convenient for you?	What types of assessment for the student's individual work do you consider most convenient for you?

There were three answer options for the first and second questions and seven for the third. Respondents were to select only one option by putting an appropriate mark (+) in the answer field.

After the survey, the responses of student and lecturer respondents were analyzed using the statistical method and the results were converted into percentages using Statistica software. Based on the analysis, the optimal structure of students' independent work according to respondents' educational level (bachelor's or master's) was determined.

5. Results
5.1. Students' Questionnaire Results
The aim of this study is to develop an approach for organizing students' independent work considering their level of education (bachelor's or master's). Therefore, the first question in the questionnaire asked student respondents to choose the structure of independent work that helps them to master subjects most comfortably (see Table 3). Analysis showed that the students were least inclined to search for learning materials independently according to the provided plan and with no other methodological help. This can be attributed to the low level of students' independent work, their unwillingness to search for materials on their own, lack of open access learning materials, low level of technical competence using modern technologies, or lack of motivation to study and search for learning materials.

Table 3: The structure of independent work

Structure	Second-year bachelor's students (%)	First-year master's students (%)
Working with materials provided by a lecturer	64	21
Literature searches according to the work plan	5	7
Working with materials provided by a lecturer + literature searching according to the work plan	31	72

Analysis showed that when studying independently, 64% of the undergraduate students preferred to work exclusively with the materials they receive from their lecturers. Such results indicate that undergraduate students are not yet ready for independent research as the majority of these respondents (64%) chose the option of being provided the necessary materials by lecturers, which indicates a low level of independent work. Twenty-one percent of the first-year master's students as well as sixty-four percent of the undergraduate students preferred to work with ready-to-use learning materials or a mixed structure. Only 7% of the graduate students preferred to search for scientific literature independently according to the work plan, which indicates unpreparedness for independent work and independent research for educational materials. More than two-thirds of the graduate students (72%) preferred working with both the provided materials and doing independent research. Twenty-one percent of the master's students preferred only working with ready-made materials.

The second question of the survey wanted to determine what types of independent work and forms of evaluation students preferred (Table 4).

Table 4: Types of independent work and forms of supervision

Types of independent work and assessments	Second-year bachelor's students (%)	First-year master's students (%)
Types of independent work		
Working with manuals and other scientific literature	17	7
Working with electronic systems	53	12
Working with manuals and other scientific literature + working with electronic systems	30	81
Types of assessment		
Testing	26	11
Essay writing	33	13
Presentation	22	42
Answering test questions (written or oral)	7	4
Practical assignments	8	17
Mini research projects	2	12
Mixed assessment	2	1

Table 4 shows that of all types of independent work, both the bachelor's and master's students least of all preferred to work only with printed literature (17% and 7%, respectively). More than half of the undergraduate students (53%) indicated their preference solely for electronic systems. Almost a third of the bachelor's students (30%) chose a mixed type of independent work. Just over 80% of the master's students chose mixed forms of independent study. The percentage of graduate students willing to work with electronic systems alone is 41% less than that for undergraduate students. Moreover, 51% more of the graduate students chose a mixed approach compared to the undergraduate students.

After studying the materials, the student must pass a test, the result of which indicates their level of proficiency. Student respondents had to indicate which of seven types of assessment were most convenient to them (see Table 4). The second-year bachelor's students most preferred such assessment forms as testing (26%), essay writing (33%), and presentation (22%). Only 19% of the students chose either answering test questions, practical tasks, mini research projects, or mixed forms of assessment. This shows that undergraduate students prefer assessments they are accustomed to from secondary school.

The results show that 42% of the first-year master's students preferred to create presentations and showcase them at seminars, which indicates motivation for independent work that involves creativity. In addition, 11% chose the "testing" option. However, only 13% of these respondents preferred to write an essay. Only 12% of respondents chose the option of "mini research projects", which indicates a low level of readiness for independent work and independent research for the necessary training materials. The assessment indicators that received the lowest score were answering questions (4%) and mixed assessment (1%).

5.2. Lecturers' Questionnaire Results
The faculty survey showed slightly different results than that for the students. This survey relied on the subjective assessment of lecturers, who will have been

more familiar with the real productivity and efficiency of students, rather than impartial assessment. The lecturer respondents had a more consolidated opinion on the structure of students' independent work than the student respondents (Table 5).

Table 5: The structure of independent study as viewed by lecturer respondents

Structure	Second-year bachelor's students (%)	First-year master's students (%)
Working with materials provided by a lecturer	70	10
Literature searches according to the work plan	8	20
Working with materials provided by a lecturer + literature searches according to the work plan	22	70

Most of the lecturer respondents (70%) considered the work with ready-to-use educational materials to be the most favorable for bachelor's students, with much fewer respondents considering independent or mixed work to be more effective (8% and 22%, respectively).

Regarding independent work for master's students, the situation was reversed: 70% of the lecturer respondents considered the mixed-type activity to be the most effective, while 20% were willing to allow master's students to work independently. Only 10% of these respondents favored the use of given materials. The lecturers' opinion in percentage ratio matches that of the first-year master's students (Table 3).

Table 6 presents the responses to the second and third questions of the lecturer survey. These responses differ from those given by student respondents, with the differences being more significant for the bachelor's students.

Table 6: Types of independent work and evaluation as viewed by lecturer respondents

Types of independent work and assessments	Second-year bachelor's students (%)	First-year master's students (%)
Types of independent work		
Working with manuals and other scientific literature	14	9
Working with electronic systems	29	3
Working with manuals and other scientific literature + working with electronic systems	57	88
Types of assessment		
Testing	31	10
Essay writing	13	29
Presentation	4	14
Answering test questions (written or oral)	6	9
Practical assignments	16	16

Mini research projects	16	22
Mixed assessment	14	0

The lecturers considered mixed activities with a greater share of independent searching to be more effective (57% compared to 30% among the bachelor's students [Table 4]). The use of electronic systems was preferred by 29% of the lecturers compared to 53% of the bachelor's students. The lecturers' opinion on which forms of independent work are more effective with master's students almost coincided with how the master's students saw their independent activity. Both categories of respondents (88% lecturers versus 81% master's students) were inclined to the mixed type of learning where the dominant form of work is literature searching.

The greatest differences were expectedly related to the forms of assessment and control. While the undergraduate students emphasized testing (26%), writing an essay (33%), and creating a presentation (22%) (Table 4), the lecturers preferred testing (31%), practical assignments (16%), mini research projects (16%), mixed assessment (14%), and essay writing (13%) (Table 6). The lecturers preferred more rigorous forms of control with a large share of practical and academic skills implementation, which are easier to evaluate. Creating a presentation was mentioned by a mere 4% and the use of test questions by only 6% of the lecturers.

While the graduate students favored assessment via presentation (42%; Table 4), the lecturers preferred essay writing (29%), mini research projects (22%), and practical assignments (16%) as types of assessment for graduate students. Only 14% of the lecturers chose presentations. As for other forms of assessment favored by the lecturers for graduate students, 10% favored tests, 9% chose answering test questions, and none were interested in mixed types of assessment. Thus, the lecturers preferred assessment tasks that demand students to be independent learners. Such types of evaluation are better suited to the learning objectives of master's students and enable lecturers to form a clearer picture of student progress.

The results therefore show that the independent work of the undergraduate students consisted of working with given materials (80%) and literature searching (20%). Most of the lecturers considered the work with ready-to-use educational materials to be the most favorable for bachelor's students (70%), and much fewer considered independent or mixed work to be more effective (8% and 22%, respectively).

6. Discussion – Theoretical Contributions
Independent work of students requires the development of new methodological approaches using modern technologies and pedagogical innovations. The results of the survey showed differences in the preferences of bachelor's and master's students and faculty regarding the structure and types of independent work and its evaluation. Based on the data presented in Tables 1–4, an approach to organizing students' independent work was developed. Regarding bachelor's students, 80% of independent learning materials should come from the lecturer.

Examples include textbooks, instructions, practical guides, and other educational literature. Students should search for the remaining 20% of sources themselves.

The significance of the findings lies in the possibility of using the developed approach for independent work of students. In addition, the results obtained can be used to develop curricula and programs in order to create an equal balance between classroom and independent work of students. In the context of a more meaningful understanding of the research problem, our study offers an approach to the implementation of independent work. This approach can be used in the educational process to improve the quality of independent work of students in general.

Based on the study's findings, it can be determined that in order to improve the quality of students' independent work, it is necessary to solve problems related to the low level of motivation of students to independently search for materials. Therefore, the developed approach is aimed at students to search for educational materials on their own, and not to use ready-made materials. Moreover, the problems associated with independent work can be solved by expanding the types of independent work and forms of supervision.

Our research correlates with prior studies based on the fact that the approaches to organizing student work are based on student preferences for digital systems (Apuke & Iyendo, 2018; Rusli et al., 2020). Another similarity is that students are more willing to work with electronic textbooks, online lectures, videos, and web searches than with printed materials (Betül Yılmaz & Orhan, 2010; Byrne et al., 2002). Negative results are represented by the fact that students prefer to use educational materials prepared by lecturers, rather than looking for them on their own. In addition, students relying on the emergence of modern teaching methods does not completely exclude printed products because some students (especially undergraduates) prefer to get the basic materials from their lecturers in a printed form before doing a web search. Such results can be explained by the low level of independent work of students, non-use of modern teaching methods by lecturers, and unwillingness of students to fully transition to the emergence of digital technologies instead of printed versions of educational materials.

Independent learners can work with either digital or printed sources, but the load these sources impose on individual learners will vary depending on their learning experience. Undergraduate students should spend 70% of their time working with digital sources, such as electronic textbooks, videos, e-learning systems, and chat rooms. The remaining 30% should be dedicated to printed literature, namely books, textbooks, tutorials, instructions, etc. As mentioned earlier, 80% of such materials, both digital and printed, should come from lecturers as a means of support. The majority of the undergraduate students in this study chose the following three forms of evaluation: testing, essay writing, and presentation (see Tables 2 and 4). The essay writing and presentation essentially imply that students focus on a single problem, while testing presents an opportunity to assess their knowledge of the entire topic. Most of the lecturers in this study expressed their preference for testing.

In general, the results of our study are consistent with our initial assumptions. Unexpectedly, the results indicated that many students prefer to use ready-made teaching materials provided by lecturers, rather than independently searching for teaching materials. Based on this, it can be concluded that the developed approach to the organization of independent work of students will help increase the level of motivation of students to independently search for educational materials. The effectiveness of the developed method may be a subject of further research.

Compared to our developed approach to the organization of independent work of students, it has also been proposed that it be implemented through a credit-module system (Nosirova et al., 2020). Similar studies have analyzed the effectiveness of a modular credit system, the advantages of which are its clear differentiation of grades and minimization of the subjective influence of the teacher (Sviridova & Timoshenko, 2018). This study argues for the differentiation of students' independent work based on their level of education. Other authors also address differentiation by specialties, groups, and other indicators (Byrne et al., 2002; Leushin & Leushina, 2017). In addition, what other research has in common with our research is that effective technologies are modern technologies that can be used by students both in preparation for classes and in classrooms (Pushkina, 2011; Ualiyeva et al., 2016).

The outcomes of our research are related to the educational process as a whole, as the developed approach allows for the organization of independent student work as one of the types of student work in any subject in order to maintain the quality of the educational process at a sufficient level.

7. Conclusions

The research proposes an approach to organizing students' independent work based on their educational level (bachelor's or master's). This approach focuses on the structure and types of independent activity and offers different forms of assessment.

The results of the survey showed that independent undergraduate students should receive 80% of materials from lecturers and find the remaining 20% of materials themselves to enhance their knowledge. Digital sources can account for 70% of their study materials, while the remaining 30% should be in printed form. According to the survey, graduate students prefer digital sources, so they should obtain 90% of materials via electronic learning systems and 10% from printed sources provided by lecturers.

Implementing the developed approach will help educators to adjust the structure of individual work according to students' capabilities and level of comprehension. The importance of tailoring students' independent work to their needs is reflected in the works of some international researchers. The suggested approach ensures that students better grasp the learning material and allows them to grow, make decisions, adapt to different situations, separate the main from the secondary, and learn how to apply knowledge in practice.

Future research possibilities can be based on studying the effectiveness of the developed approach in the organization of independent work of students in the educational process. In addition, it is important to find new methodological approaches to the implementation of independent work of students, in particular with the help of modern technologies and pedagogical innovations.

8. Acknowledgments

Conflict of Interest

This research has no conflict of interest.

Availability of Data and Material

Data will be available on request.

Ethical Approval

The research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. The research was approved by the local ethics committees of Far Eastern Federal University. Informed consent was signed by respondents.

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