

**Comparative analysis based on the results of a survey of students of 2-5 courses for 2018-2022 on the EP 6B07108 "Heat power engineering" (5B071700 "Heat power engineering")**

To determine the satisfaction of students with educational services from 2019 to 2022 Center for Quality Management and Accreditation conducted questionnaires "Satisfaction of students of 2-5 courses with educational services". The purpose of this questionnaire is to improve the curriculum, the quality of services provided and other activities of the university.

Due to force majeure circumstances in the conditions of the pandemic, the university switched to a distance learning format in 2020, and in 2021 to a mixed distance and offline learning format, which led to the updating of questions in the questionnaire on student satisfaction. The questions in the questionnaire were updated annually by almost 70%. In this regard, the questions in the questionnaire for 2019, 2020 and 2021 are different and this does not make it possible to make a complete monitoring and comparative analysis by year. A comparative analysis based on the results of the survey was carried out on those questions that were repeated in the questionnaire for 2018-2021.

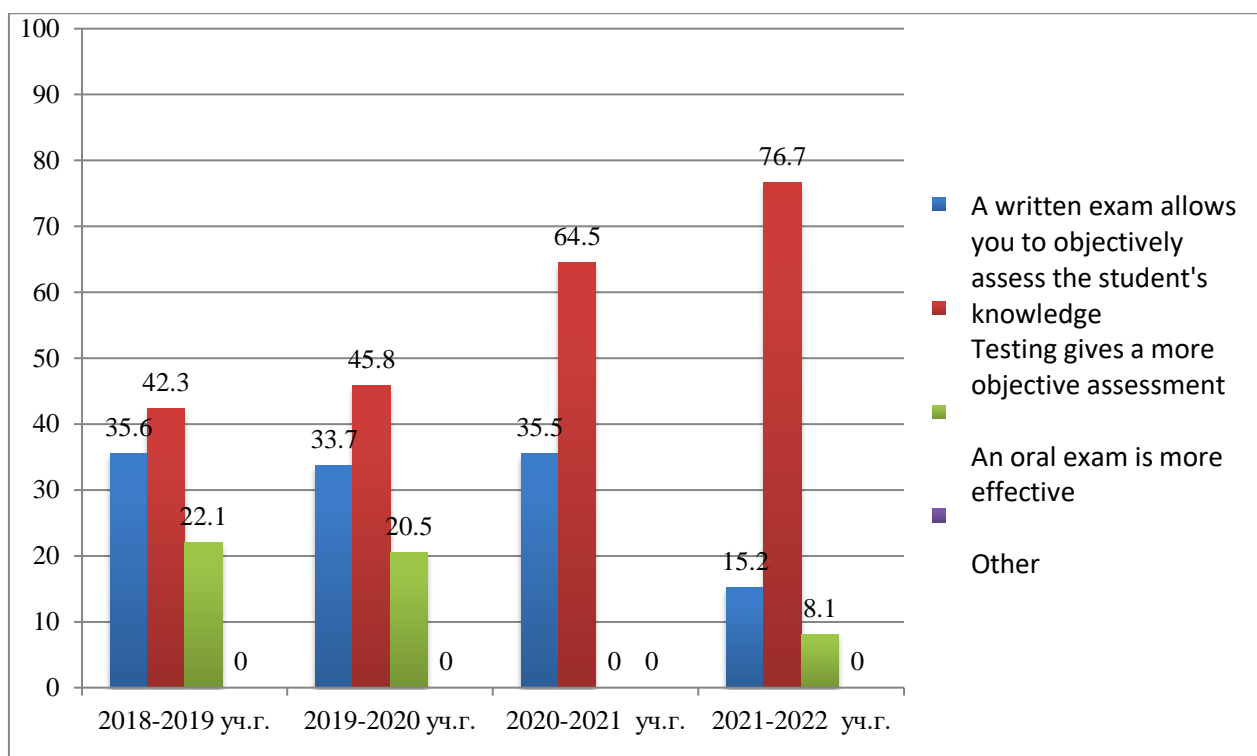
Nevertheless, over the years, according to the results of each survey conducted, a report was formed, including generalized data obtained indicating the percentage of choice for each question in the form of diagrams, tables or other means of statistical presentation of information, their quantitative and qualitative analysis. At the end of each report, conclusions based on the results of the survey and suggestions of students for improving educational services are given.

According to the results of the survey , the following data were obtained:

**1. Is the student's knowledge assessment system used at the University effective?**

Table 1

	<b>2018-2019 ac.y.</b>	<b>2019-2020 ac.y.</b>	<b>2020-2021 ac.y.</b>	<b>2021-2022 ac.y.</b>
A written exam allows you to objectively assess the student's knowledge	35,6	33,7	35,5	15,2
Testing gives a more objective assessment	42,3	45,8	64,5	76,7
An oral exam is more effective	22,1	20,5	-	8,1
Other	-	-	-	-



**Figure 1. Dynamics of the effectiveness of the application of the student's knowledge assessment system at the University**

As can be seen from the results of the survey (Figure 1) for 2018-2021 showed that when assessing knowledge at the university, testing gives an objective assessment. This can be seen in the growth dynamics of the response **"Testing gives a more objective assessment"** (Figure 1). This dynamic, in our opinion, is due to the relative simplicity of the procedure itself, minimal time spent, the content of the tests themselves, the organization of the testing process, the level of students' computer skills.

As with any kind of verification and control of knowledge, and during testing, the main task is to identify the true level of knowledge of students, excluding the subjective factor on the one hand and with the friendly attitude of the examiners to the students on the other hand.

For 2018-2021, the dynamics of the decline is shown by the answer option **"A written exam allows an objective assessment of a student's knowledge"**. Although there are advantages to this type of knowledge assessment, students put low scores every year. This may be due to insufficient time to check the papers and announce the results on the same day; the bias of the exam due to the possibility of cheating; a decrease in the number of excellent grades due to the inability of the student to promptly correct minor flaws; difficulty in assessing the level of understanding of the topic, the ability to reason logically; inconsistency for all academic disciplines.

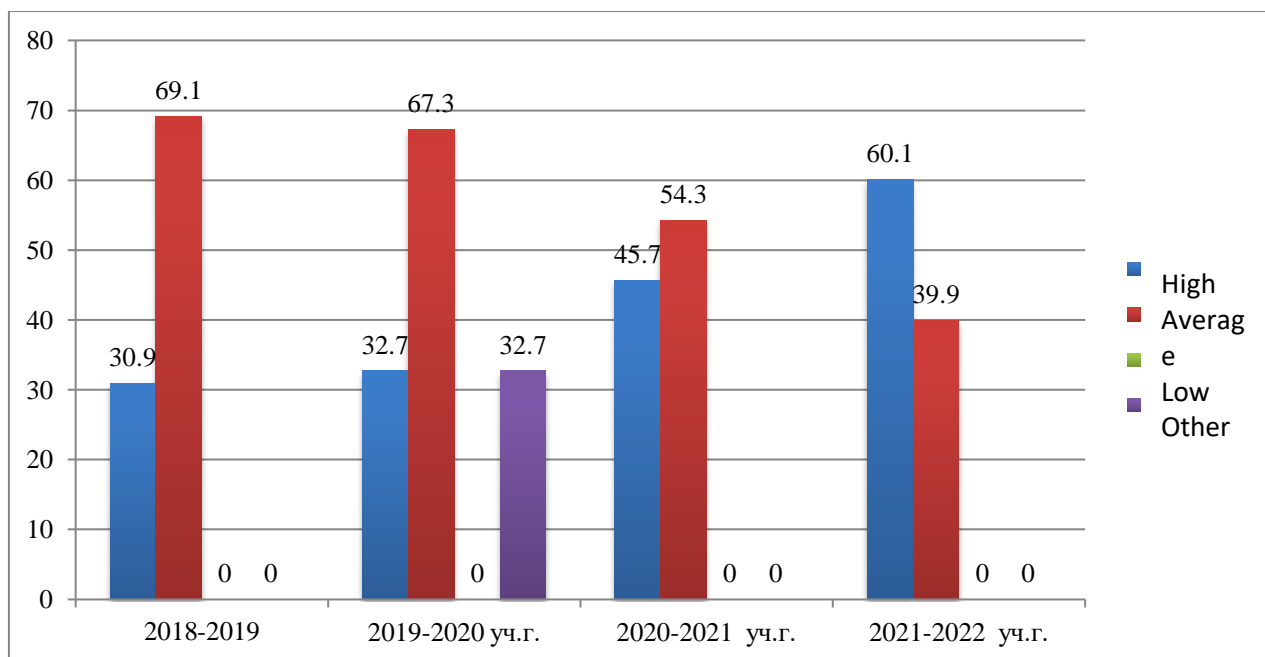
The answer option **"The oral exam is more effective"** showed the lowest scores. Many students are afraid to speak in front of the public, they may get lost when asked a direct question.

From a way of testing knowledge, the exam should become a means of preparing young people for independent adulthood, and should not serve to test individual qualities (mainly developed intelligence and trained memory) in certain areas of knowledge, but affect the whole person, require them to show the strength of his spirit, will, mind, feelings. The future belongs to alternative forms of the exam – which will reveal versatile professional skills and abilities, will contribute to the active systematic work of teachers and students on the problems identified in the exam questions throughout the entire period of study.

**2. Please rate the level of satisfaction with the organization of the student's independent work (provision of all necessary materials).**

Table 2

	<b>2018-2019 ac.y.</b>	<b>2019-2020 ac.y.</b>	<b>2020-2021 ac.y.</b>	<b>2021-2022 ac.y.</b>
High	30,9	32,7	45,7	60,1
Average	69,1	67,3	54,3	39,9
Low	-	-	-	-
Other	-	32,7	-	-



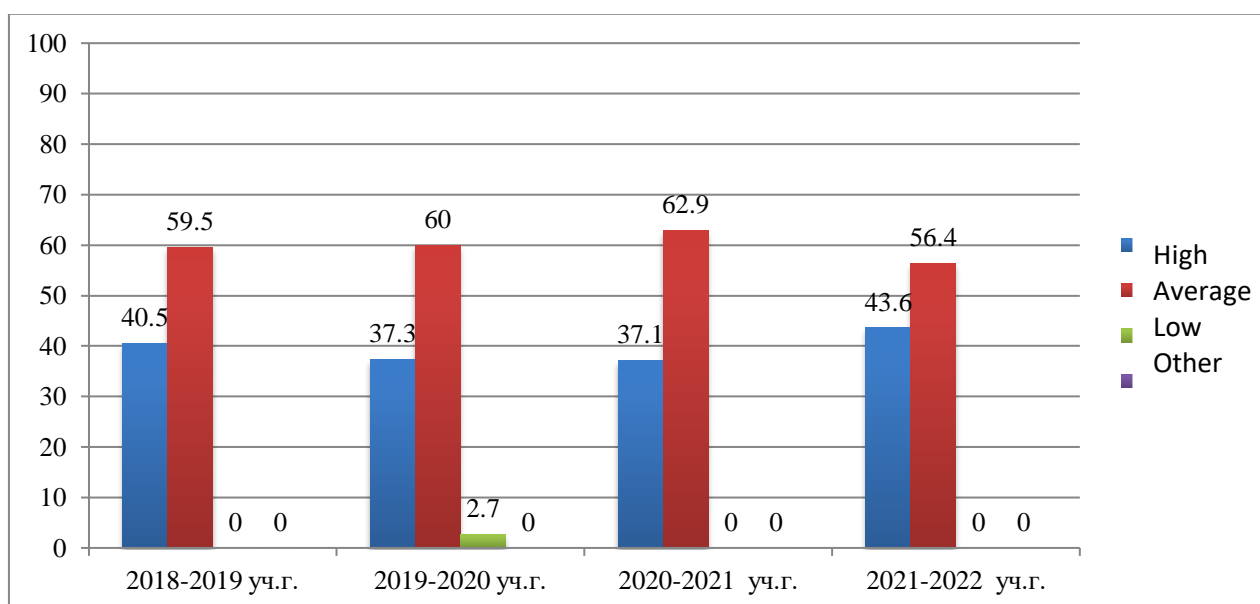
**Figure 2. Dynamics of assessment of the level of satisfaction with the organization of independent work of the student (provision of all necessary materials).**

The answers to this question have unstable indicators (Table 2). When comparing the results of the student survey, it can be seen that student satisfaction indicators increased from 2018-2019 to 2021-2022 academic years (Table 2). At the same time, there are answers to the "other" answers option. Having considered the students' comments, it suggests that efforts should be made to eliminate the inconveniences of students associated with providing all the necessary materials, with the search for the required literature for independent work. Teachers with a distance learning format need to keep in touch with students by answering their questions in a timely manner.

**3. Please rate the level of the basic organization of the practice (are the materials available):**

Table 3

	2018-2019 ac.y.	2019-2020 ac.y.	2020-2021 ac.y.	2021-2022 ac.y.
High	40,5	37,3	37,1	43,6
Average	59,5	60	62,9	56,4
Low	-	2,7	-	-
Other	-	-	-	-



**Figure 3. Dynamics of assessment of the level of the basic organization of practice (are materials available)**

The assessment of work practice by students is an important aspect that allows improving the process of organizing the annual practice of students, which, in turn, has a positive impact on the quality of the educational process.

When assessing the parameter "**the level of basic organization of practice (whether materials are available)**" according to the results from 2018-2019 academic year to 2021-2022 academic year, on average 39.6% of the surveyed students rated as "high", 59.7% of the surveyed students – "average", 0.7% of the surveyed students – "low".

Starting from 2019-2020 academic year, the tendency of the answer "high" was on the decline, however, in 2021-2022 academic year, compared with 2020-2021 academic year, students' satisfaction with the level of basic organization of practice (are materials available) as can be seen from table 3 has changed for the better.

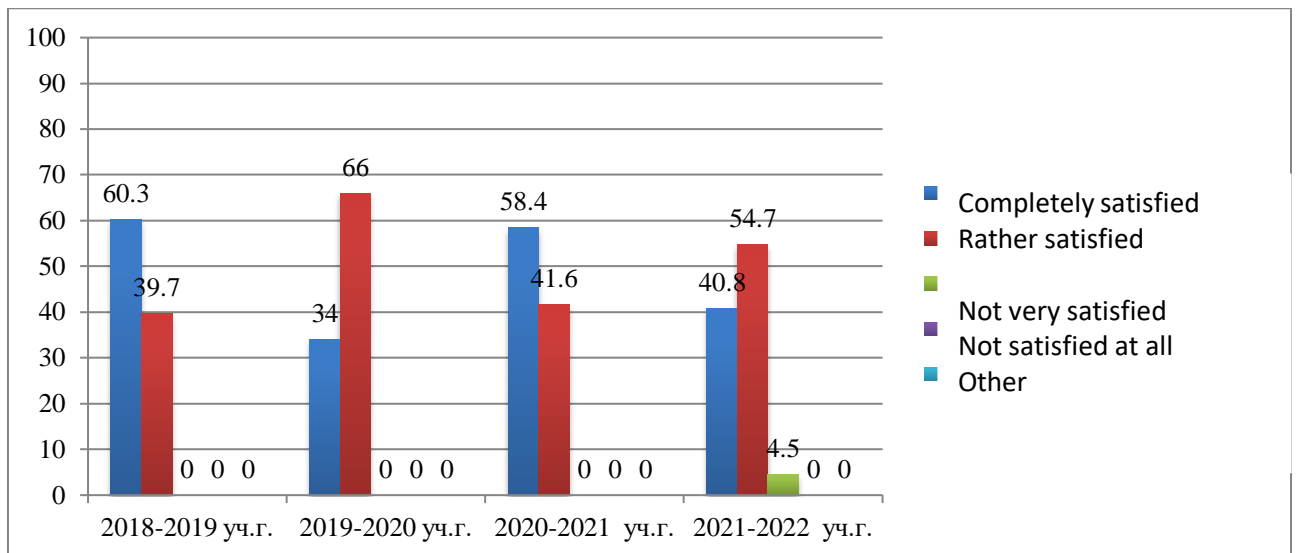
When assessing the degree of satisfaction with the organization of practice, it is necessary to take into account 2 factors. On the one hand, it is the satisfaction of students with the chosen specialty according to various parameters, on the other hand, it is a direct assessment of the organization of the internship. The analysis of these characteristics together makes it possible to assess not only the level of satisfaction with the quality of education, but also how promising the acquired knowledge is considered for their future employment.

The organization of practice remains one of the least satisfying areas for students, but at the same time the most important. This issue deserves special attention. Taking into account the results of the survey, it is necessary to improve the system of organization of practice, taking into account both the wishes of students and the situation in the market of specialists. A University graduate wants to be sure that he will have enough knowledge and skills to become a qualified specialist and be in demand. The organization of an internship, the conclusion of internship agreements with an employer can also contribute to the establishment of social ties between students and a future employer and significantly reduce the level of tension about employment.

#### **4. Are you generally satisfied with your student life?**

Table 4

	<b>2018-2019 ac.y.</b>	<b>2019-2020 ac.y.</b>	<b>2020-2021 ac.y.</b>	<b>2021-2022 ac.y.</b>
Completely satisfied	60,3	34	58,4	40,8
Rather satisfied	39,7	66	41,6	54,7
Not very satisfied	-	-	-	4,5
Not satisfied at all	-	-	-	-
Other	-	-	-	-



**Figure 4. Dynamics of student life satisfaction**

Most of the students are generally satisfied with their student life. According to the results of the trainees, a noticeably high level of student satisfaction in the 2018-2019 academic year compared to other academic years, online learning has had a strong impact on student life and, consequently, on the experience of studying at the university as a whole. Online students experience a sense of satisfaction and community to a lesser extent. Students began to experience stress more often, missed communicating with classmates.

Most often, students, when switching to a distance learning format, experienced problems due to lack of communication with friends, noted problems with technology, as well as the difficulty of learning at home.