

Technologies for organizing independent work of students in teaching hydraulics

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Annotatsiya: Gidravlika fani, suyuqliklar va ularning harakatini o'rganadigan muhim bir ilmiy soha bo'lib, muhandislik va texnika sohalarida keng qo'llaniladi. Ushbu fanni o'qitishda talabalarning mustaqil ishlarini tashkil etish texnologiyalari, ularning bilim va ko'nikmalarini rivojlantirishda muhim rol o'ynaydi. Mustaqil ishlar, talabalarni faollashtirish, ularning o'z-o'zini nazorat qilish qobiliyatini oshirish va o'rganish jarayonida mustaqil fikrlashga rag'batlantirishga yordam beradi.

Kalit so'zlar: gidravlika, dars, mustaqil ta'lim, gidravlik tizimlar, suyuqliklar mexanikasi, bosim va oqim nazariyasi.

Аннотация: Гидравлика — важная научная область, изучающая жидкости и их движение, широко применяемая в инженерно-технических областях. При преподавании этого предмета важную роль в формировании знаний и навыков играют технологии организации самостоятельной работы студентов. Самостоятельная работа способствует активизации студентов, повышению их самоконтроля, развитию самостоятельного мышления в процессе обучения.

Ключевые слова: гидравлика, урок, самостоятельное обучение, гидравлические системы, механика жидкости, теория давления и потока.

Abstract: Hydraulics is an important scientific field that studies fluids and their motion, and is widely used in engineering and technical fields. In teaching this subject, technologies for organizing independent work of students play an important role in developing their knowledge and skills. Independent work helps to activate students, increase their self-control, and encourage independent thinking in the learning process.

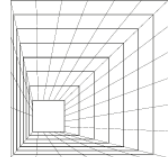
Keywords: hydraulics, lesson, independent learning, hydraulic systems, fluid mechanics, pressure and flow theory.

INTRODUCTION

When organizing independent work in hydraulics, first of all, it is important to set specific goals for students. Students, according to the curriculum, must master basic concepts such as hydraulic systems, fluid mechanics, pressure and flow theory. Once the goals are clearly defined, students will have the opportunity to apply their knowledge in practice in the process of planning and executing their independent work. Independent work can be organized in different forms. For example, students can do independent work by solving problems with hydraulic systems, conducting experiments and analyzing their results. Such work, in addition to providing students with practical skills, also helps to strengthen their theoretical knowledge. Students can also conduct research on topics of interest and submit them. This process serves to develop skills for students to express and discuss their thoughts.

MATERIALS AND METHODS

The application of interactive teaching materials and technology for students is also important in teaching hydraulics. Modern technologies, such as simulation programs and virtual laboratories, help to understand the work of hydraulic systems for students. Through these programs, students will be able to simulate and learn about real-life hydraulic processes. Also, through online resources and platforms, students can independently improve their knowledge. Encouraging cooperation among students is also important in organizing independent work. It creates favorable conditions for group work, exchange of knowledge among students and discussion of ideas. Such work encourages students to help each other, share their thoughts, and solve problems together. Group work also helps to develop social skills among students. When teaching hydraulics, an assessment system is also



important for independent work. When evaluating their work, students will have the opportunity to independently analyze their knowledge and skills. The assessment process encourages students to be more responsible for their work and encourages them to increase their knowledge. The grading system also creates healthy competition among students and increases their commitment to self-development.

RESULTS AND DISCUSSIONS

Technologies for organizing independent work of students in the teaching of hydraulics serve to increase their activity in the process of reading, to develop their knowledge and skills. This process prepares students to think independently, solve problems, and apply their knowledge in practice. Because Hydraulics is important in the fields of modern engineering, the application of technologies for organizing independent work of students in the teaching of this discipline will be an important factor for their future success. It is also necessary to improve the curricula and curricula for students when organizing independent work in the field of hydraulics. Curricula should include state-of-the-art technologies and techniques for students. This helps to prepare students for solutions to problems with hydraulic systems. The allocation of time and resources for independent work in educational plans allows students to develop their knowledge.[1]

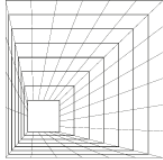
When organizing independent work, it is also important to create motivation for students. Students must reflect on the outcomes and successes of their work, evaluate and use their knowledge. This process helps to increase students' interest in their knowledge. Students will also be able to evaluate and discuss their work in the process of submission. Technologies for organizing independent work in the teaching of hydraulics, serve to activate students in the process of training, to develop their knowledge and skills. This process prepares students to become successful engineers in the future and increases their commitment to self-development. Since Hydraulics is important in the fields of modern engineering, the application of technologies for organizing independent work in the teaching of this science is an important task for students.

At the same time, in the process of organizing independent work on the subject of hydraulics, teachers also play an important role. Teachers, by supporting, advising, and guiding students in their independent work, are required to help them develop their knowledge. Teachers can organize independent work more effectively by communicating with students, identifying their interests and needs.[2]

The science of hydraulics is a scientific field related to liquids and their mechanical properties. This science is very important for students as it is used in many engineering and technology fields. In teaching hydraulics, students can acquire a number of important knowledge and skills through independent work. First of all, students learn the basics of hydraulics. This includes the properties of liquids, their movement, pressure, flow rate, and other basic concepts. Through independent work, students get acquainted with the dynamics and statics of liquids. They study how the fluid moves in different states, changes in pressure, and how the flow changes under different conditions. This knowledge helps students to further understand hydraulic systems. Students also study hydraulic laws. Basic hydraulic laws, such as Bernoulli's law, Pascal's law, and Archimedes' law, are studied independently by students. This is necessary to understand the laws, the movement of liquids and their control. During independent work, students learn to apply these laws through practical examples, allowing them to test theoretical knowledge in practice.[3]

Independent work also helps students develop problem-solving skills. Students develop the skills of expressing, analyzing and finding solutions to problems with hydraulic systems through independent work. This process makes it possible for students to learn analytical thinking and problem solving. In addition, students are introduced to hydraulic systems and equipment. During independent work, students learn to work with various hydraulic systems such as hydraulic presses, pumps, cylinders and other equipment. They study the principles of operation of these equipment, their structure and application.[4]

This knowledge prepares students for application in engineering practice. In teaching hydraulics, students also develop teamwork skills through independent work. Often, students do independent work in groups to help them learn from each other, exchange ideas, and solve problems together.



Teamwork skills help students become more successful in the professional environment in the future. Students also have the opportunity to self-assess and consolidate their knowledge through independent work. Evaluating their work will help determine their strengths and weaknesses for students. This will help their self-development and further deepen their knowledge. In teaching hydraulics, students gain many important knowledge through independent work. This knowledge helps to combine their theoretical knowledge with practical skills, solve problems, work with the team and develop themselves. As a result, students develop the skills needed to become mature professionals in the field of hydraulics. This helps them to be successful in their future professional careers.[5]

CONCLUSION

In general, when teaching hydraulics, the technologies for organizing independent work of students serve to increase their activity in the process of reading, to develop their knowledge and skills. This process prepares students to think independently, solve problems, and apply their knowledge in practice. Because Hydraulics is important in the fields of modern engineering, the application of technologies for organizing independent work of students in the teaching of this discipline will be an important factor for their future success.

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