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USING WEB PLATFORMS IN TEACHING THE DISCIPLINE OF MECHANICS

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Abstract

This article highlights the importance and effectiveness of using web platforms in teaching mechanics. Modern educational technologies enable students to strengthen their theoretical knowledge through interactive tools, simulations, and distance learning. The educational process can be organized in a visually appealing and engaging format with platforms such as PhET Interactive Simulations, Moodle, and Khan Academy. Additionally, the article explores the potential of Learning Management Systems (LMS), gamification, and automated testing. Web platforms facilitate personalized learning, the organization of distance education, and an objective approach to assessment. Solutions are also proposed to address technological limitations and motivational challenges.

Keywords: Modern educational technologies, Web platforms, PhET Interactive Simulations, Moodle, Khan Academy, Distance learning, LMS (Learning Management Systems), Gamification.

Introduction

The use of modern web platforms in teaching mechanics in Uzbekistan plays a crucial role in improving the quality of education and enhancing the efficiency of the learning process for students. By utilizing modern technologies and internet capabilities, new opportunities are emerging for both teachers and students. This, in turn, helps make a complex subject like mechanics more engaging and comprehensible.

In the modern education system, the development of competencies among future physics teachers is of great importance. The use of web platforms, especially in

teaching mechanics, offers significant opportunities in this process. This presentation examines effective ways to utilize web technologies to enhance the professional skills of prospective physics teachers.

Main part

In this context, we will discuss the practical aspects of using modern approaches, interactive methods, and digital tools in teaching mechanics. This methodology not only enhances the knowledge and skills of teachers but also increases students' interest in the subject.

The role of web platforms in teaching physics:

Modern educational systems elevate the process of teaching physics to a new level with the help of web platforms. These platforms play a crucial role not only in delivering theoretical knowledge but also in developing practical skills. They allow students to observe complex physical phenomena in virtual laboratories, conduct experiments, and analyze results.

- 1.To reinforce theoretical knowledge, web platforms offer video lectures, animations, and interactive texts.
- 2. For the development of practical skills, there is the possibility to conduct experiments using virtual laboratories and simulators.
- 3. To assess knowledge, online tests and interactive tasks are used to determine the level of material comprehension.
- 4. For collaborative learning, group activities are organized through online forums and project work.

The significance of web platforms:

1. **Broad range of information** – Web platforms include various educational materials, such as video lectures, interactive experiments, and tests. This allows future teachers to gain extensive knowledge.
2. **Flexible learning** – Teachers and students have the opportunity to learn at any time and from any place, making the learning process more efficient and convenient.
3. **Collaborative learning** – Through web platforms, future teachers can exchange experiences and work together on projects. This develops teamwork skills.

4. **Modern technologies** – The use of virtual laboratories, 3D models, and other digital tools makes it easier to understand and explain complex physical processes.

The use of web platforms in teaching mechanics is one of the current challenges of modern education. These platforms help strengthen students' theoretical knowledge, develop practical skills, and increase interest in the subject. Below are the advantages of using web platforms and ways to enhance their effectiveness:

Advantages:

1. Interactivity – Web platforms allow the use of interactive animations, simulations, and models to explain the theory and practice of mechanics. For example, they provide the opportunity to observe the effects of forces, kinetic energy, or other mechanical processes in real-time.
2. Individualized learning – The ability to create lessons tailored to each student's knowledge level and learning pace. Platforms offer tasks of varying difficulty, helping to develop the learner's abilities.
3. Distance learning – Web platforms give students the opportunity to participate in lessons remotely, which is especially important during pandemics or other situations when traditional in-person education is limited.
4. Testing and assessment capabilities – Programs allow for automatic testing and assessment of students' knowledge. This makes the teacher's job easier and ensures objectivity in evaluation.

Methods of using web platforms:

- Explanation of basic concepts of mechanics – Through platforms such as YouTube, Khan Academy, or Coursera, students can be provided with ready-made educational materials, lessons, and practical tasks.
- Mechanical simulators – Using interactive simulators to explain mechanical processes. For example:

a) PhET Interactive Simulations – provides the opportunity to model both simple and complex physical phenomena.

b) Algodoo – an engaging and interactive tool for teaching the laws of mechanics.

- LMS (Learning Management Systems) – In systems such as Moodle, Google Classroom, or Blackboard, student activity is managed, and educational resources, assignments, and tests are placed.

- Gamification – Web applications that teach based on game elements. For example, mini-games or step-by-step tasks that explain physical laws.

Platforms suitable for teaching mechanics:

- PhET Interactive Simulations: Interactive games and models on physics and mechanics.
- Simulink (MATLAB): For modeling dynamic systems.
- Khan Academy: Lessons and tests on mechanics.

Challenges and solutions:

1. Technological limitations – Some students may not have access to the internet or necessary technology. Solution: Adapt platforms for offline use.
2. Lack of motivation – Students' attention may easily drift in online learning. Solution: Increase the use of gamification and interactive elements.
3. Teachers' technological skills – Teachers need specific training to effectively use web platforms. Solution: Provide teachers with special training to enhance their technological skills.

Conclusion

Using web platforms in teaching mechanics expands opportunities for both students and teachers. By using the right approach and tools, the efficiency of the process can be significantly improved.

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