

Tendencies in Improving the Component of Resistance of Materials of Higher Engineering Education in The Electronic Learning Environment

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Abstract:

Using information technologies to teach the science of "Resistance of Materials" in technical higher education and structuring the electronic learning process accordingly, as well as enhancing the resistance of materials component when developing a distance learning course in electronic education and developing design skills are all examined in this article. developed.

Keywords: Electronic education, integrative approach, electronic resource, IT, teaching methodology, multimedia, open source platform.

Introduction

Employers' expectations for future engineers' professional training are greatly impacted by the science and technology fields' rapid advancement, particularly in the area of materials resistance. Technical higher education graduates are required to become proficient in mathematical modeling and forecasting techniques and to use these techniques in their working lives.

The study of material resistance has a wealth of practical applications, including the ability to identify significant relationships between processes and occurrences in the workplace. Future engineers can create techniques for creating and evaluating mathematical models of engineering challenges because to materials resistance science. Additionally, it fosters the development of judgment and intuition in predicting and ambiguous decision-making processes.

A thorough grasp of the principles of the science of material resistance, the capacity to recognize and make use of intra- and interdisciplinary connections, and a practical orientation in a higher mathematics course are all necessary for improving the training of future engineers in the resistance of materials. to strengthen students' abilities in using the science of material resistance to produce, solve real-world issues, and simulate natural events and processes.

At the same time, a tendency in the evolution of contemporary education is the decrease in the amount of time that technical university courses devote to the study of materials resistance. In addition, the demands of the job market regarding the professional credentials of future engineers are increasing. In light of this, much research is being done to find better ways to educate

engineering students the physics of material resistance. Let's examine the primary avenues for enhancing future engineers' material resistance preparation.

There are several ways to enhance the ways that mathematics is taught in secondary and higher education, according to mathematicians and instructors both domestically and internationally. A review of dissertations on the subject of teaching resistance of materials in higher education revealed that the majority of these studies focused on the relationship between teaching resistance of materials and students' future professional endeavors. Many scholars have looked into the professional direction of teaching the science of material resistance and concur that this kind of training boosts educational motivation, which is a crucial component of improving teaching effectiveness.

The method of teaching students in higher education via the use of electronic tools and technology is known as e-learning. It is intended to be an innovative and traditional teaching strategy. The following are some theoretical and methodological facets of electronic learning:

Conceptual elements:

- Cognitive psychology: Concepts from cognitive psychology can be used to e-learning. The ability to structure the processes of information reception, processing, assimilation, and problem resolution is one of these features.
- Teaching using constructivism: This approach pushes pupils to become adept at creating their own knowledge and ideas. Students can expand their knowledge using interactive tools and hands-on exercises in constructivist e-learning instruction.
- Cooperative learning: This philosophy promotes cooperative collaboration among students. Through the use of online collaboration tools and group work platforms, e-learning provides students with the chance to engage with others, collaborate with the public, and contribute to the community.

Methodological facets:

- Online tests, educational games, multimedia resources, interactive lectures, and e-books are some examples of the interactive learning technologies that are used in e-learning. These resources support learning, pique students' interests, and solidify their knowledge.
- Blended Learning: Students can access a variety of online programs and resources through the blended learning paradigm of e-learning. This gives students the freedom to select their own educational pathways and utilize various programs based on their proficiency levels.
- Distance learning: One aspect of online education is remote learning. Students are free to study whenever and wherever they choose. Students benefit from this by having access to education and mutual protection.

Elevating the level of student learning and energizing the learning process are the three main goals of e-learning theory and methodology: building stronger student-teacher relationships. In addition to fostering the growth of educational and research procedures, this approach is crucial to making learning simple and engaging for students.

Students can develop an integrated and practice-based educational experience using a variety of strategies used in the teaching style of online open source platforms that follow an integrative

approach. Students are able to learn and practice during part of their free time with this technique, which also includes open source programming. When handling the technique, the following ideas are crucial to remember:

Open source platforms provide students with the opportunity to study many programming languages and a variety of tools through the use of blended learning, an integrative learning style. In a blended learning environment, this enables students to acquire and use several programming languages.

Practice-based learning: With this approach, students go through practice-based assignments to learn open source programming. Students get the chance to practice and hone their programming abilities while learning a programming language. They may also learn programming standards and best practices while working through real-world projects.

Project and teamwork: Students are given the opportunity to work on many projects as well as community service while learning using an integrated method. As they collaborate on the same project, students may put their theoretical understanding of programming into practice. It enables students to comprehend the practical aspects of project management, programming, business model creation, and community service.

Conversation and assistance: An integrated approach to teaching students should promote cooperation, conversation, and idea sharing via open-source platforms. Students will be able to address contemporary programming challenges by being creative, growing quickly, and challenging their programs with others.

The learning process of open source platforms is transformed into a practice-based and facilitating environment by the teaching style based on an integrated approach. With the help of this approach, students may manage projects, collaborate with others, comprehend programming fundamentals, and acquire programming techniques.

To sum up, every teacher must have a great deal of intellect, patience, and passion for teaching and teaching profession in order to successfully complete the education and training process. The capacity to fully comprehend pupils, observe their inner worlds, track their degrees of growth and development, and assist them with words, work, or practical actions as needed is a result of the teacher's ongoing search for knowledge and experience. A few elements that guarantee the process's effectiveness include education and training. Successful teachers are also frequently those who have professional pedagogical expertise in an online learning setting. They develop different visual aids in an electronic learning environment based on an integrated strategy, and they can effectively coordinate pedagogical project work.

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