



## MODERN SOLUTIONS FOR TEACHING INFORMATICS TO YOUNG PEOPLE

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### Annotation:

In this article, computer science education is becoming increasingly important in modern society, since technology is now an integral part of almost all aspects of our life. There is a growing demand for education in Informatics in schools, colleges and universities around the world. However, traditional methods of teaching computer science may no longer be sufficient to meet the needs of modern students.

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Computer science education is becoming increasingly important in modern society, since technology is now an integral part of almost all aspects of our lives. There is a growing demand for education in Informatics in schools, colleges and universities around the world. However, traditional methods of teaching computer science may no longer be sufficient to meet the needs of modern students. This dissertation explores modern solutions to computer science education, including the use of online resources, gamification, and project-based teaching, and their effectiveness in enhancing Informatics Education. Online resources. The growing and low cost of online resources has revolutionized the way Informatics is taught. Education management systems (LMS), public open online courses (MOOCs), and other online resources have made computer science education available to a global audience.

These resources offer flexibility in content delivery and the ability to learn at their own pace. They also provide expert tutors, useful learning materials, and access to interactive learning experiences. In the digital age, teaching computer science is becoming more and more important, since technology is shaping all aspects of our lives. Informatics is a difficult subject, but if taught using online resources, it can become an enrichment and interesting experience. Below are some methods by which online resources have positively influenced the teaching of Informatics:

1. A wide range of educational materials. There are many digital resources on the internet such as videos, textbooks, e-books, podcasts, and websites that help teach computer science. Most of these materials are designed to satisfy students' diverse learning styles, facilitate understanding of complex concepts and skills, and help maintain students' interests and motivation.
2. Personalized educational experiences. Most of the online resources are interactive and flexible, allowing teachers to provide educational opportunities tailored to each student's needs and goals. With the right mix of content, exercises and quizzes, studying computer science can become a personal experience for students.
3. Free and open courses. One of the most important advantages of online resources is that most of them are free and can be used worldwide, regardless of the location and institution in which they are



located. For students in low-income areas or those who need basic knowledge to improve their professional skills, this presence provides a great opportunity to acquire skills. 4. Possibility of cooperation and expression. Many online resources include collaborations and feedback that allow students to work together on assignments and interact directly about their ideas and progress. This results in good results as students can review and make changes to their ideas, concepts and codes based on the feedback given. 5. Continuing education. The availability of online resources allows students to engage in self-management. Students can continue to learn outside of the traditional classroom environment, keep their knowledge in line with the demands of the Times, and learn on their own terms.

Available online resources for computer science include virtual labs, repositories, and online communities dedicated to a specific program or coding language. Readers in remote or underserved regions can access these platforms and receive coding support from professionals in such communities. Project-based education. Project-based education is an approach to teaching Informatics and is focused on student practice.

Students work on projects that require the skills and knowledge learned in their courses to be applied to real problems. This approach develops critical thinking, problem-solving skills, and creativity while encouraging collaboration and teamwork. It also helps students develop workplace related skills such as Project Management, Communication, and time management. As demand for STEM work increases, it becomes increasingly important for students to acquire practical, real-world skills in Informatics. Project-based education provides a framework for students to develop these skills, facilitating knowledge acquisition and application of theoretical concepts in real projects. Project-based education in Informatics encourages group work, problem-solving, and critical thinking, allowing students to have important skills that prepare them for careers in areas such as coding, software development, web design, cyber security, data analysis, and machine learning. Project-based teaching some ways to improve the teaching of Informatics:

1. Collaboration: one of the most important advantages of project-based learning in Computer Science is that it creates a collaborative learning environment. Students work in teams to solve complex problems and develop software, applications and games while using other soft skills such as teamwork.
2. Participation: instead of students passively accepting information in lecture-based classes, they actively participate in their education when they are part of the project. Instead of remembering the information contained in the textbook, it encourages the assimilation of theoretical concepts and their absorption into their work.
3. Relation to the real world: projects in informatics can be modeled after real problems, further increasing the relevance of the curriculum. The students then work with the real challenges they face in their chosen fields.
4. Creativity: to complete their projects, students need to train their creative muscles to develop new solutions to complex problems. This creativity allows them to think outside the box and ultimately move technology forward and lead to innovation.
5. Individualized education: Informatics is a broad field with a wide range of specialties.



Through project-based education, students can explore different areas of computer science, leading to an individual and self-directed experience. In order to see the greatest benefits of project-based learning in computer science, teachers must provide students with the right support, guidance, and resources. A robust technological infrastructure is also important to support project-based education and to allow students to work independently. Efficiency.

These modern solutions have proven to be effective in enhancing education in the Informatics Sciences. Online resources have made computer science education accessible to students around the world, allowing them to study from anywhere and at any time. Gamification has been shown to improve student engagement, motivation, and memory of information, and project-based teaching has helped students develop skills that are job-appropriate while developing critical thinking and problem-solving skills. However, these solutions are not without problems such as the use of technology, the need for evaluation and the need for a supportive learning environment. As technology continues to change every area and aspect of our lives, there is an increasing need to equip students with the necessary digital skills. Hence, teaching Informatics is important in modern education. However, teaching Informatics is a complex task and requires a comprehensive and holistic approach to give students the necessary knowledge and skills. The effectiveness of the teaching methods used in achieving this is important. In this essay, I will study the most effective ways to teach computer science.

1. Problem education. Problem education is a teaching method that brings real-world scenarios to the classroom to encourage critical thinking and problem-solving skills. With this technique, students work on real-life problems in the context of their courses, applying the theoretical concepts they have received. The effectiveness of problem Education has been confirmed by several studies. For example, a study among bachelors in Computer Science at the University of the United Kingdom found that students improved their critical thinking, problem-solving, and communication skills when engaging in problematic learning activities.

2. Practical work. Another effective method of teaching Informatics is practical training. Many computer science concepts require practical application for students to understand effectively, and hands-on activities allow students to experiment with a variety of tools, programming languages, and applications and experience feedback and results directly.

3. Collaborative learning. Collaborative learning is an effective method of teaching Informatics, especially in project-based teaching. Collaborative educational activities encourage students to apply different skills and knowledge to perform tasks together, develop teamwork, develop interpersonal relationships, and improve outcomes. Thus, students can mentally Attack, Experiment and get feedback with who is offline and online.

4. Personalized education. The current state of educational technologies makes it possible to personalize the educational experience of students. Personalization focuses more on adapting teaching techniques, curriculum and non-academic support to meet the unique needs of individual students. Personalized education increases academic achievement as well as student interest and interest in learning. In conclusion, the use of online resources, gamification and project-based education are modern solutions that have enhanced computer science education.



These solutions offer flexibility and a personalized learning experience for students, encourage activity and motivation, and develop essential skills needed for the workplace. Teachers should carefully consider these solutions when planning their educational strategies to ensure that they are supported by a supportive learning environment and assessment strategies that encourage and reinforce learning. By applying these solutions, teachers can prepare students to solve the problems of the rapidly changing technological landscape.

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