THE RELEVANCE OF TEACHING COMPUTER SCIENCE AND FACING PROBLEMS

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Abstract: In the era of technology, every young generation must not only use modern tools but also be able to manage and work effectively with them. Along with developing thinking and creative abilities, it is essential to enrich their knowledge of the digital world. This article discusses the relevance of teaching informatics and computer science in schools today and sheds light on the challenges currently faced in the process.

Keywords: Informatics, computer science, school education, digital literacy, informatics teachers, modern technologies, coding, STEM education.

АКТУАЛЬНОСТЬ ПРЕПОДАВАНИЯ ИНФОРМАТИКИ И СТОЛКНОВЕНИЕ С ПРОБЛЕМАМИ

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Аннотация: В эпоху технологий каждое молодое поколение должно не только использовать современные инструменты, но и уметь управлять ими и

эффективно работать с ними. Наряду с развитием мышления и творческих способностей, важно обогащать их знания о цифровом мире. В этой статье обсуждается актуальность преподавания информатики и вычислительной техники в школах сегодня и проливается свет на проблемы, с которыми в настоящее время приходится сталкиваться в этом процессе.

Ключевые слова: Информатика, информатика, школьное образование, цифровая грамотность, учителя информатики, современные технологии, кодирование, STEM-образование.

INTRODUCTION

Today, the field of computer science is one of the fastest-growing and highest-paying professions in the world. Moreover, by the 21st century, technology has become an integral part of every aspect of our lives. Regardless of which corner of the world we go to, it is almost impossible to find a place untouched by technology. This is especially evident in developed countries, where modern technologies have significantly simplified daily life. Intellectual labor is now considered more valuable than physical labor.

However, if we look at the statistics, we observe a decline in students' interest in computer science. Nevertheless, mastering this subject has become a necessity of the time. Even for students who are not particularly interested in the field of computer science, studying informatics is beneficial. With the growth of the digital era, there is a growing need for logical thinking, computational skills, and problem-solving abilities. Regardless of the career path, whether it be creating a file, preparing a report, or presenting a topic, knowledge of computer science has become essential.

When informatics was first introduced in schools, it was often regarded as mere computer literacy and was considered uninteresting or unimportant by many students. However, today, the role of an informatics teacher is seen as one of the most challenging and responsible professions. Considering the increasing demand for skilled professionals with informatics knowledge and the growing number of

job opportunities in the field, it is clear that informatics is becoming a vital tool for driving global innovation.

Computer science is a discipline that encompasses the theoretical and practical knowledge used by computer specialists in their work. As an academic field, it includes a broad range of topics—from the theoretical study of algorithms and computational limits to the practical implementation of computing systems in both hardware and software domains. [1]

MAIN BODY

Today, computer science, coding, and digital literacy are increasingly being recognized as essential subjects in schools—on par with English and mathematics. These subjects should be introduced early, even at the preschool level. For example, in Israel, children learn to code from a young age, shaping their mindset and helping them better understand the world.

Research from Maryland, USA, shows that high school students who take quality computer science courses are 10% more likely to pursue related careers. According to Lightcast™, jobs in computer science are projected to grow by 21% between 2023 and 2033—nearly double the growth rate for other bachelor-level jobs. So why doesn't everyone go into this field? The main reason is its difficulty. Computer science requires strong foundations in mathematics and the ability to adapt to constantly evolving technologies. It is essential for young people to use technology effectively—not just for entertainment, but as learning tools. To achieve this, schools must provide strong informatics education. This also supports social-emotional learning and helps students develop problem-solving and computational thinking skills like "sequencing," which are useful in many life areas.

However, informatics education faces major challenges: a shortage of qualified teachers, outdated textbooks, and limited computer access (often 2–4

students per device). Parents also need to understand its importance, as many still underestimate it. Meanwhile, new technologies like AI and cybersecurity require updated curricula and better-trained teachers. Investing in teacher training, certifications, and project-based learning (such as app design or robotics) can significantly boost student engagement. Addressing equity is crucial—many rural schools lack stable internet or modern tools. Governments must close the digital divide, and public-private partnerships can help with resources and mentorship. Encouraging girls and underrepresented groups is also important. Early exposure and role models reduce gender and racial gaps in STEM. Schools can organize coding clubs, mentorship programs, and awareness campaigns to inspire all students.

Finally, the perception of computer science must change. It should not be seen as optional or niche, but as a core subject essential for navigating today's digital world. From healthcare to finance and education, every field relies on technology. Teaching students to become creators—not just consumers—of technology prepares them for future careers.

In conclusion, making computer science a standard part of school curricula is not just an education reform—it is an investment in a country's digital future.

CONCLUSION

In today's digital era, where the study and teaching of computer science have become essential, the primary task is to eliminate the existing challenges in this field. In many cases, the teaching of computer science should be integrated with game-based learning—similar to how other subjects are introduced—especially for young learners. This means that teachers must be well-trained in playful teaching methods and encouraged to organize subject-specific competitions and olympiads to increase engagement. Additionally, schools should focus more on hands-on learning activities. While theoretical knowledge is important, practical application is critical in the field of computer science.

Furthermore, parental involvement is also essential. Parents must support their children at home and encourage them to actively engage with computer science. Only through a collective effort between educators, students, and parents can we prepare future generations for a technology-driven world.

REFERENCES

1. A.Abduqodirov, A.Xaitov, Shodiev R. Axborot texnologiyalari. Darslik. T.: “O‘zbekiston”, 2004 y.
2. https://blog.uol.ac.cy/post/best-countries-to-study-computer-science-top-education-opportunities
3. S.Tursunov, I.Nazarov. Ta’limda axborot texnologiyalari. Darslik. Toshkent: “Adabiyot uchqunlari”, 2019. 2- tom, - 300 b.
4. https://www.franklin.edu/blog/how-hard-is-computer-science
5. Rakhmonkulov F.P., Usaroq S.A., Shabutayev Q.S. Teaching computer science at school – current challenges and prospects // 2020, Vol. 6.217-221
6. B.Boltayev, M.Mahkamov, A.Azamatov. Informatikadan olimpiada masalalarini y yechish. Metodik qo‘llanma, Toshkent, 2004.
7. A., & Atkinson, R. D. (2016). The case for improving US computer science education. Available at SSRN 3066335.
8. Schoenfeld, A.H.: Reflections on problem solving theory and practice. The Mathematics Enthusiast 10, 9-34 (2013)
9. Olakulehin, S.E. (2014). Fundamental of Computer Education and Educational Technology. Enugu: Cedartop.
10. Thomas, M. and Ranga in UNESCO (2004). The Effect of Geometry Tool Software on High School Geometry Achievement. Journal of Computers in Mathematics and Business Studies Teaching, 10, 51-57.
11. Grover, S., & Pea, R. (2013). Computational thinking in K–12: A review of the state of the field. *Educational Researcher*, 42(1), 38–43. https://doi.org/10.3102/0013189X12463051