

METHODOLOGY FOR FORMING PROGRAMMING COMPETENCIES OF THE STUDENTS OF ACADEMIC LYCEUM OF THE MINISTRY OF INTERNAL AFFAIRS

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Abstract: *This article discusses the methodology for developing students' programming competencies in computer science, who study at the academic lyceum of the Ministry of Internal Affairs, covering in details, as well as educational approaches aimed at developing algorithmic thinking, forming the ability to solve problems independently, and improving practical programming skills by providing students with knowledge in modern technologies and programming.*

Keywords: *programming, Academic Lyceum of Internal Affairs, algorithmic thinking, project-based learning, gamification.*

Introduction. Formation of programming skills is an important task for every educational institution in the present era, when modern technologies are developing rapidly. Especially, it is important for the students of the Academic Lyceum of Internal Affairs the role of knowledge and skills in this field. In this article, the attention is paid to the methodology of effectively organizing the process of providing students with programming competencies.

The major use of information technologies in all spheres of society, including the activities of internal affairs bodies (IAB), is giving effective results in the introduction and improvement of modern methods of fight against crime.

Due to the strengthen of the information supply in the activities of the IAB the regular collection of reliable information describing the immediate situation, as well as their timely, high-quality analysis, are important factors in the organization of the fight against crime. The automation of information processes depends on the introduction of computer technologies, data collection, storage, processing and

processing based on the modern technology of the time. It is demanded of people who getting ready skills to use information technologies in practice to the solving the problem of accelerating information in the activities of internal affairs bodies.

Therefore, improving the methodology of teaching programming in MIA academic lyceums remains one of the most essential problems today.

Internal affairs programming competencies are important for optimizing security systems, analyzing data and making quick decisions.

Programming is one of the skills of the 21st century, which is indispensable in solving problems in any speciality. Acquisition of sufficient knowledge and skills in programming by students of the academic lyceum will affect their further education and professional activities at the next level (bachelor's degree).

Today, the Internal Affairs system requires the efficient use of information technology. Therefore, students in this field need to have programming competencies.

When teaching programming, the lack of practice or interesting methodologies in the classroom can reduce students' interest and, as a result, limit their knowledge.

Students may vary in their initial programming knowledge and preparation. This requires an individual approach.

Lessons are not practice-oriented or do not include modern programming languages. Insufficient use of interesting and interactive methods is due to the limitations of methodology and tools.

Failure to link theoretical knowledge with practical programming issues can hinder students from developing programming skills.

There is a need to teach the basics of programming (such as using simple programming languages like Python), applying programming to solve real-life problems (such as data processing, creating simple applications for internal work systems), allowing students to develop independent projects, using interactive

platforms (such as Code.org, Replit, or other online programming platforms), gamification (gaming-style learning to engage students).

There is a need to program mini-projects on the management of databases and information security issues used in the system of internal affairs. They need to develop programming tasks that are tailored to the abilities and interests of each student. There is a need to organize special courses on programming for the internal affairs system and teach innovative methodologies to teachers.

As a result, students' knowledge and skills in programming will be increased, students will be prepared to use digital technologies necessary for the internal affairs system, the effectiveness of education will be improved and students will be encouraged to be creative.

A well-developed methodology for solving this problem ensures the preparation of students of the academic lyceum in accordance with modern requirements and the needs of the internal affairs system.

The application of programming competencies is effective in teaching programming to students of the Academic Lyceum of Internal Affairs.

Programming competencies involve the development of the following skills of students:

Algorithmic thinking: Solving problems in a structured and systematic way.

Practical programming: Writing software code and adapting it to work.

Analytical thinking: Analyzing information and making decisions.

Designing skills: Formulating programmatic solutions to solve a specific problem.

Algorithmic thinking is the ability to solve a problem in a step-by-step, systematic and logical way. This ability involves analyzing problems in depth, visualizing them as structures, and using specific algorithms to come up with effective solutions. Structural and systemic approaches to problem solving are the main principles of developing algorithmic thinking.

The structural approach involves breaking down a problem into small, manageable parts and then solving each part separately. This approach is based on the following principles: understanding the problem in its entirety and identifying the requirements for the solution, breaking the problem into subcomponents, solving each part independently, developing a separate algorithm for each part, combining the solutions of all the parts to arrive at a general result.

Structural and systems approaches are important tools for developing algorithmic thinking. These approaches are not only effective for solving programming problems, but also for solving complex real-life problems. Developing algorithmic thinking enables students to apply logical, systematic, and creative approaches, preparing them to solve contemporary problems.

Analysis and results. In order to determine the level of effectiveness of the proposed model, pedagogical experimental work was carried out. Students of the academic lyceum of internal affairs of 1-2 courses were involved in the experimental work. The recruited students were divided into experimental and control groups. In this case, 93 students of the 1st and 2nd year were involved in the experimental group and 94 in the control group. Students in the experimental group were taught using a model developed as part of the study and organized extracurricular activities of the students. The control group was not given this option. The results of the students involved in this experiment were analyzed and mathematical-statistical analysis was carried out on the basis of the Student-Fisher criterion in order to verify

their reliability. Using this criterion, appropriate mean values $\bar{X} = \frac{1}{n} \sum_{i=1}^4 n_i X_i$,

repetitive coefficients $D_n = \sum_{i=1}^4 \frac{n_i (x_i - \bar{X})^2}{n-1}$, and formulas were used for the samples.

The experimental group scored higher than the control group, an increase of 9.8%.

Conclusion and suggestions. By simulating real-life situations in the course of lesson, engaging students in teamwork and solving the problems increase efficiency.

The formation of programming competencies for students of the Academic Lyceum of Internal Affairs is important in improving their professional training. These competencies develop students' ability to master modern technologies, analytical approach to problem solving, and the ability to develop programmatic solutions. In the future, developing this methodology further and implemented in practice can be contribute to the professional success of students.

USED LITERATURE

1. Decree of the President of the Republic of Uzbekistan No. PF-4947 dated February 7, 2017 “On the Strategy of Actions for the Further Development of the Republic of Uzbekistan”.
2. Resolution of the President of the Republic of Uzbekistan No. PQ-3775 dated June 5, 2018 “On additional measures to improve the quality of education in higher educational institutions and ensure their active participation in the comprehensive reforms being implemented in the country”.
3. Decree of the President of the Republic of Uzbekistan dated October 8, 2019 No. PF-5847 “On approval of the Concept for the development of the higher education system of the Republic of Uzbekistan until 2030”
4. Decree of the President of the Republic of Uzbekistan dated April 29, 2019 No. PF-5712 “On approval of the Concept for the development of the public education system of the Republic of Uzbekistan until 2030”
5. Abdukodirova. P.T, D.M.Mahmudova. Preparation of future teachers for professional activity through the development of algorithmic competencies. Journal of Public Education. 2022. Issue 5 p. 27-33.
6. Abdukodirova P.T. The importance of developing algorithmic competencies in future teachers. News of the National University of Uzbekistan
7. Zakirova F.M. Theoretical and practical foundations of methodological training of future teachers of computer science in higher pedagogical institutions: Author's thesis....ped.fan.dok. – T.: TDPU, 2009. – 44 p.

8. Mirsanov U.M. Methodology for increasing the effectiveness of teaching mathematics using practical programs in general secondary schools (on the example of grades 5–6) Dissertation for the degree of Doctor of Philosophy (PhD) in Pedagogical Sciences. – Tashkent, 2019. – 190 p.