



METHODOLOGY FOR IMPLEMENTING SOFTWARE SUPPORT FOR IMPROVING THE TEACHING METHODS OF NATURAL SCIENCES IN GRADE 6 BASED ON AN INTEGRATIVE APPROACH

Baxtiyoriy Madinabonu Baxtiyor qizi

Independent Researcher, Tashkent State Pedagogical University

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Abstract. Based on an integrative approach, the goal is to demonstrate the connection between the knowledge, skills, and competencies acquired by 6th-grade students and their daily lives through lessons and extracurricular activities. This involves conducting educational research, performing experiments, fostering creativity directed toward project development, and cultivating students' interest in creating innovations.

Keywords: Natural sciences, knowledge, skill, competence, scientific competence, practical competence, researcher, integrative approach.

The integrative approach in teaching natural sciences to 6th-grade students aims to show the relationship between the knowledge, skills, and competencies they acquire and their daily lives. This is achieved through lessons and extracurricular activities that include educational research, experimental work, project-based creativity, and the development of curiosity toward innovation.

Practical classes, laboratory work, and hands-on assignments tailored to the natural sciences curriculum for 6th grade — all designed to foster logical thinking, practical skills, creativity, and independent problem-solving — are considered one of the main responsibilities of teachers.

On an international scale, there is an emphasis on strengthening interdisciplinary connections and practical approaches in teaching general education subjects. The first stage of learning geography, from grades 1 to 6, is taught within the framework of the “Science” program. In Uzbekistan, courses such as Economic and Social Geography of Uzbekistan, World Economic and Social Geography, and General Geography are taught in a spiral model, ensuring that the knowledge acquired at each stage is systematically expanded. As a result, students develop the competencies necessary to apply their skills and knowledge in practice.

Pedagogical software tools is a broad term applied to any and all software intended for use in the field of education. This term encompasses everything from student information systems and classroom management software to database management programs and language learning applications. However, all of these are used with the aim of making certain aspects of the education industry more efficient or effective [2].





One type of pedagogical software is employed by nearly every educational institution, and as the number of available solutions and their capabilities grow, they are becoming increasingly widespread. The scope of tools in the education sector is expanding, particularly with the advent of artificial intelligence software and the recognition by the private sector of the enormous potential in developing education-related software.

Why use pedagogical software tools?

Educational programs are highly beneficial for teachers, administrators, students, and parents alike. Solutions in this category offer users a wide range of advantages—from visibility and content distribution to analytics and improved communication channels. Smart content, enhanced communication, data integration, and increased efficiency are among the benefits that come with implementing educational software.

This “smart” content can be easily modified, distributed, and reused by learners of various generations.

Teachers can use resources such as classroom management software to limit distractions and improve focus on course material. The main user groups of pedagogical software tools are teachers, students, parents, and school administrators. Each group uses these tools to enhance their educational experience, reduce inefficiencies, and facilitate communication.

Most educational programs are designed for administrators and teachers to create content, share lessons, manage classes, and store information related to schools and students. Students use various types of solutions to access selected content and lesson plans, take exams, and study. Parents use the communication provided by these tools to interact with administrators and teachers, ensuring that their children receive the necessary support and maintain academic performance.

Trends in pedagogical software tools

Improving the quality of education involves enhancing its educational and methodological base, integrating ICT into the learning process, and paying special attention not only to classroom-based instruction but also to extracurricular forms of learning. This includes developing and implementing new methods of organizing and managing education that meet modern requirements and ensure the achievement of educational goals. Such approaches aim to increase student activity, independence, and motivation, as well as to develop their professional competencies—issues that are considered among the most pressing challenges today.





Teacher-parent-student communication

Clear communication between teachers, parents, and students is essential for the educational process. A strong level of respect and trust is necessary to guide students properly. Educational programs and applications help develop stronger connections between all parties through forums, portals, and other interactive elements. Parents and students have access to tools that enable easy communication with their teachers and administrators. Clear and effective communication channels facilitate mutual understanding between potentially conflicting parties. Students can ask teachers questions to clarify uncertainties about course materials and assessment methods, and parents can gain a clear view of their children's progress.

Data consolidation

Many types of educational software are designed to consolidate relevant information into a centralized repository. Combining all necessary data within a single program allows for better control and the extraction of more accurate insights from this information. Administrators and educational specialists can use these insights to manage both lower-level teaching strategies and higher-level administrative policies.

Improved efficiency

The goal of any institution is to become more efficient and effective, and educational software helps organizations achieve these objectives.

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