# Section 6. Secondary school

## INFORMATION TECHNOLOGIES IN ORGANIZING KNOWLEDGE TESTING IN PHYSICS

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**Abstract**

In the era of global digitalization, one of the priority directions in the development of education in the Republic of Kazakhstan is the integration and active application of modern information and communication technologies (ICT) into the instructional process. The purpose of this study is to develop physics lesson materials created through the use of digital tools. The objectives are to design instructional content for teaching and knowledge assessment using Microsoft Office and MyTestXPro software. Methods: digital tools and functionalities of Microsoft Office, as well as modules of the MyTestXPro platform. The article outlines the key stages involved in developing physics assessment test materials.

**Keywords:** *MyTestXPro, information technologies, knowledge assessment, physics education, testing*

## Introduction

The use of digital technologies and resources plays a crucial role in the development of students' functional literacy, enabling them to adapt to the contemporary information society. Digital tools contribute to the formation of critical thinking skills, the ability to work with diverse information, and the capacity to solve real-world problems. In the modern educational environment, a physics teacher must serve not only as a guide to the laws of nature, but also as a proficient navigator of the digital landscape. For physics teachers, programs such as Word, PowerPoint, and MyTestXPro have become indispensable tools that enhance the clarity, interactivity, and overall effectiveness of instruction. One of the teacher's key tasks in organizing the educational process is the need to assess students' knowledge. The most commonly used forms of assessment are written and oral questioning.

## Method

The use of information technologies for introducing new material is an essential component of contemporary physics instruction (Asainova, 2013; Nurym et al.,

2020; Abdulayeva et al., 2025). The clarity, accessibility, and interactivity of presenting theoretical concepts can be enhanced through tools such as Microsoft Office, Smart Notebook, virtual laboratories, and others. MyTestXPro is a software system designed for creating and administering computer-based knowledge assessments, as well as for collecting and analyzing test results (www.klyaksa.net, n.d.). The system comprises three modules: the test editor (My Test Editor), the testing module (My-TestStudent), and the testing log or server module (My Test Server) (Figure 1).

**Figure 1.** *Tools of the MyTestXPro Software*
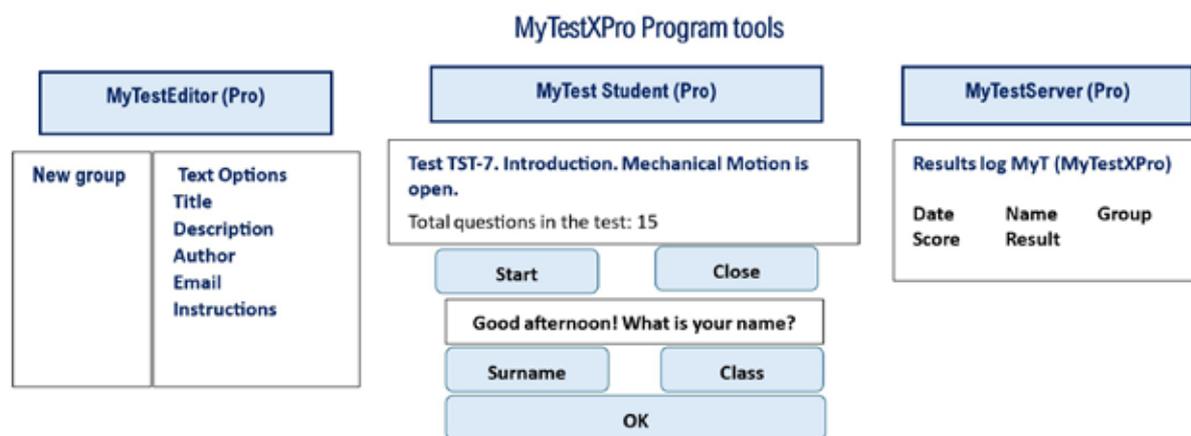


Author: Alexander Bashlakov. The program has been developing since 2003, from simple versions to a modern complex.
https://www.klyaksa.net/

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### Results & Discussion

During written assessments, it is possible to evaluate the performance of each student; however, the process of checking such work is time-consuming, and students do not receive immediate feedback. During oral questioning, students receive feedback instantly, but only a limited number of learners can be assessed within a single lesson. Paper-based testing, as a form of knowledge assessment, allows teachers to evaluate each student with fewer time costs for checking, yet it requires maximum attention and accuracy from the assessor. The use of information technologies makes it possible to automate the testing process and minimize subjective factors.

The MyTestEditor program enables users to create, edit, and configure specific parame-

ters for organizing the testing process. For example, it allows adjustment of how test items are presented, selection between training mode and assessment mode, and protection of a test with a password – both the test itself and its results. Password-protected results were particularly relevant during distance learning. If the "Monopoly Mode" option is selected, the test-taker will be unable to access the internet or any other program. The "Free Mode" option allows the test-taker to skip a question and return to it later (Figure 2).

The program supports eleven types of tasks: single choice, multiple choice, sequencing, matching, identifying statements as true or false, manual numerical input, manual text input, selecting a point on an image, letter rearrangement, and fill-in-the-blank questions. The use of manual numerical input, manual text input, and fill-in-the-blank items (Figure 3) has advantages over single-choice and multiple-choice formats, as it reduces the likelihood of guessing the correct answer.

If the settings "show only items with errors" and "do not display the correct answer" are enabled, the student is encouraged to search for a solution rather than memorize the

response. MyTestXPro allows for both local and network-based testing. Testing can also be conducted without any network connection. In network mode, test results may be automatically transmitted to the Journal module or sent by email. If it is not possible to provide each student with a computer, the test questions can be printed according to the specified parameters, indicating the required number of variants. In this case, each student receives an individualized version, while the instructor receives answer keys for efficient assessment.

**Figure 2.** *Test Parameters in MyTestEditor*



**Figure 3.** *Tasks in MyTestEditor*



Testing in the MyTestXPro program makes it possible to assess the knowledge of each student individually. In the local testing mode, the process is managed through the MyTestServer module, while students access the test via the MyTestStudent module. Upon completion, the student receives immediate feedback in the form of a test performance report (Figure 4).

This feature helps students engage in thorough self-reflection, understand their strengths and weaknesses, identify knowledge gaps, and plan further learning steps. The test results are transmitted via the local network to the teacher's computer and stored in the Results Journal. The collected data can be analyzed within the journal and used to generate various types of reports. The MyTestXPro program is a highly convenient

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tool for organizing the educational process. Its use allows lessons to become more interactive and effective. The application of information technologies serves as an important instrument in developing students' functional literacy.

**Figure 4.** *Test Performance Report*



**Test Performance Report**
File: Test TST-7. Introduction. Mechanical Motion.mtx
Test TST-7. Introduction. Mechanical Motion
Test Completed
Test Taker: Student 1 (Grade 7B)
Date: May 17, 2025
Start Time: 2:43:40 PM. End Time: 3:09:29 PM.
Duration: 12:25:48 AM
Total Test Questions: 15. Completed: 15. Correct: 12.
Score: 8

**Score Table**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|----|
| + | + | + | + | + | + | + | + | + | +  |

| 11 | 12 | 13 | 14 | 15 | | | | | |
|----|----|----|----|----|--|--|--|--|--|
| %  | %  | %  | +  | +  | | | | | |

### Conclusion

The use of Microsoft Office enables clear and accessible presentation of instructional material, provides students with the necessary printed resources, and supports teachers in checking and analyzing students' work. Testing with the MyTestXPro program allows for the assessment of each student's knowledge, with immediate feedback provided in the form of a performance report upon completion of the test. MyTestXPro can be used to organize both local and network-based testing. Testing can also be conducted without any network connection. In network mode, test results may be automatically transmitted to the Journal module or sent via email. The results collected in the Journal can be analyzed and used to generate comprehensive reports.

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