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ANALYSIS OF SCIENTIFIC STUDIES AIMED AT ADVANCING THE THEORY AND PRACTICE OF TESTING

U.M.Rasulov*Uzbek-Finish Pedagogical Institute, Uzbekistan***I.X.Abdullayev***Uzbek-Finish Pedagogical Institute, Uzbekistan***U.Mansurov***Uzbek-Finish Pedagogical Institute, Uzbekistan*

ABOUT ARTICLE

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Abstract: A number of national and international scientific conferences have been organized to explore the theoretical and practical aspects of test technology. This article provides an analysis of scientific research focused on advancing the theory and practice of testing.

INTRODUCTION

Determining certain professional qualifications and abilities of individuals has long been an important issue. In ancient times, civilizations such as Babylonia and China employed methods to assess and select professional skills for government work.

Later, the English scientist Francis Galton was a pioneer in developing research methods to discern differences in elementary mental abilities among individuals. His system was based on three fundamental principles that are still in use today:

1. Testing many individuals under the same conditions;
2. Statistical analysis of the results;
3. Establishment of evaluation criteria.

Sir Francis Galton (1822-1911) viewed testing as a source of scientific data, contingent upon necessary conditions. He outlined these conditions as follows:

1. Uniform conditions for all test takers;
2. Consistency in test duration;
3. Exclusion of external interference at the test site;
4. Precision and refinement of testing tools;
5. Standardized instructions for all test takers;

Analysis of test results to determine the maximum, average, and minimum scores, along with the arithmetic mean and standard deviation.

This approach by Galton laid the foundation for modern testing methodologies.

The American scientist William A. McCall was the first to categorize tests into psychological, developmental, and pedagogical types for educational purposes.

E.L. Thorndike, known for his work in educational psychology, pioneered the development of pedagogical tests based on scientific standards. Other scientists, including C.E. Spearman, H. Gulliksen, L. Guttman, F.M. Lord, M. Novick, G.F. Kuder, and M.W. Richardson, contributed significantly to the reliability theory of testing, while L. Crocker and A. James advanced the classical test theory.

Currently, Item Response Theory (IRT) is widely employed internationally and in CIS countries. Georg Rasch developed the one-parameter IRT model, while the two- and three-parameter models were expanded by A. Birnbaum, D. Andrich, and B. Wright.

A. Anastasi's seminal work, "Psychological Testing" particularly the 2006 edition co-authored with S. Urbina, presents modern test technologies.

During the Soviet era, the concept of "testing" was considered foreign and its use was discouraged. Post-1985, Russia and CIS countries began embracing this methodology, and research in this field expanded. In 1985, the first research center was established under V.S. Avanesov, which produced educational materials including the "Teoriya i praktika konstruirivaniya pedagogicheskikh testov," a 2002 manual by M.B. Chelishcheva incorporating IRT and other methodologies.

Russia introduced a unified state exam for admission to higher education, necessitating systematic test preparation and evaluation methodologies. A.N. Mayorov's work highlights essential standards and processing technologies for these tests.

Modern information and telecommunication technologies are integral to administering and analyzing the unified state exam. Software tools developed by V.I. Nardyupiva and I.V. Nardyupiva are used in Russia's federal research centers. These include Tester for the testing process, operator software for test result confidentiality, and StatInfo for statistical analysis.

V. Ivanova and I.A. Morev have significantly contributed to the application of test technology in distance education, developing software like STEACHER, DIALOG, PHRACON, and DIDACTOR. Morev emphasized the dual role of testing as both a measurement and a didactic tool, underlining its potential to enhance teaching and learning.

Uzbekistan was among the first CIS (Commonwealth of Independent States) countries to adopt testing for student admissions and personnel selection.

The study of the effectiveness of tests as a method of pedagogical control of future specialists with higher education is covered in the article [1].

These studies aim to highlight the pros and cons of mass control technologies, address the slow adoption of pedagogical testing, and provide recommendations for its implementation. The changing educational landscape has shifted the focus to tests, reducing teacher workload and enhancing student self-assessment.

The articles also discuss test data updates as a key aspect of pedagogical measurement. They define a test as a method, tool, and measure, fundamentally different from exams. The structure, types (open and closed), and modifications of test tasks are analyzed, along with their advantages and disadvantages. In conclusion, the use of testing as an objective method to measure student knowledge, skills, and abilities is advocated, emphasizing its validity, reliability, efficiency, cost-effectiveness, and task complexity.

In the article [2], the question of updating test data is considered as one of the objective methods of pedagogical measurement. The author of the article analyzed the views of current and local research on the concept of "testing". A test is defined as a method, a tool, a measuring instrument, a problem, a set of questions, a set of test tasks, which are performed based on a certain rule, and it is related to the exam from the point of view of making measurements. It is completely different from private jobs. The article describes the main requirements for the structuring of tests and tasks in the test form.

According to the conclusion of the author of the article, all the tasks in the test form can be divided into two types: open and closed, which in turn have certain modifications, each of their features is explained in detail, their advantages and disadvantages are indicated.

This article analyzes the qualitative criteria of the test, in particular, its validity (reasonableness), reliability, competence, efficiency or technology, economic efficiency and complexity of tasks. The article concludes that it is appropriate to use the test as an objective method of measuring students' knowledge, skills and abilities.

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