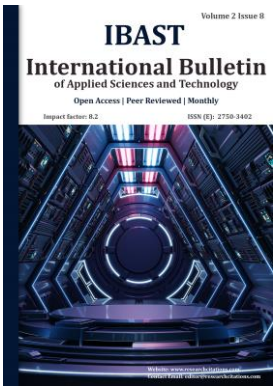


# SCIENTIFIC AND METHODOLOGICAL BASIS OF IMPROVING THE THEORETICAL BASIS OF USING TESTOLOGY IN THE EDUCATIONAL SYSTEM

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**Annotation:** In this article, it is necessary to take into account many factors and take into account the socio-pedagogical environment and conditions when evaluating the educational achievements of students. Today, the need to modernize pedagogical measures and introduce international programs in education is increasing. The main goal of international assessment programs is to provide feedback on how students apply the knowledge they learn at school in everyday life.

**Key words and phrases:** modern society, independent education, modern worldview, social necessity, digital economy, evaluation process, innovative and digital, market economy, Education and training, scientific and methodical.

## INTRODUCTION

The issue of modernizing the world education system, introducing an innovative approach to it, and regularly improving pedagogical measures, assessment criteria and standards is gaining relevance.

Curriculum and plans define educational goals (what do we teach? i.e. the answer to the question "what do we teach?"), teaching methods and educational materials in accordance with these goals is selected (how do we teach? that is, the answer to the question "how do we teach?"). Evaluation methods provide information on the extent to which the educational system has achieved its goals.[1]

If these three components work in harmony with each other, that is, if the educational goals are clear, and the teaching methods and materials are selected in accordance with these goals, then the evaluation system will determine the extent to which the participants of the educational system have achieved these goals. can provide, the education system will be effective and can provide quality.

Certain rules and requirements should be taken into account when assessing students' knowledge, skills, qualifications, and competencies, and these rules and requirements form the object of the science of pedagogical measurements.

Pedagogical measurements is a branch of pedagogy that develops and implements methods and tools for measuring and evaluating the results of the students' educational activities. Pedagogical measurements are the field of pedagogy that develops and implements methods and tools for measuring (determining) the level of formation of knowledge, skills, competences, and competencies of students.

## LITERATURE ANALYSIS AND METHODOLOGY

Assessment refers to the process of measuring the level of formation of a set of knowledge, skills, qualifications and competencies in learners.

The goal of the evaluation process is measurement, and one of the theorists of testology, Fredrik Lord and Melvin Novick, defines it as follows: "measurement is the process of attaching numbers (scores) to the concrete characteristics of the object of experience." So, measurement is considered to quantify the properties of the object.

Fredric Lord and Melvin Novick identify three important steps in the measurement process.

a) identifying the experimental object

b) defining the measurable property

c) clarification of the rule of expressing the measured property of the experimental object with a number.[2]

In order to understand the essence of measurement in pedagogy, it is necessary to fully understand the complex of knowledge, skills, qualifications and competencies, as well as the characteristics that need to be measured. Usually, appropriate educational standards, qualification requirements and curricula are defined for each stage of education.

In pedagogy, it is impossible to directly measure a characteristic of a student. Such measurement can only be done indirectly (observation, interview, test, etc.). Therefore, the evaluation process in pedagogy is based on indirect conclusions. In this case, the assigned tasks act as a measuring tool, and depending on how the learner performs these tasks, a conclusion is drawn about the degree to which he has acquired knowledge, skills, abilities and competencies, and the degree to which skills, skills and competencies have been formed. can be issued. But tasks cannot fully cover the characteristic to be evaluated. Hence, another feature of the assessment process is to draw conclusions about the entire competencies through limited samples.

Today, the need to modernize pedagogical measures and introduce international programs in education is increasing. The main goal of international assessment programs is to determine how students apply the knowledge they learn at school in everyday life.[3]

The task of the international assessment standards is to provide sufficient information to find answers to the following questions facing the participating countries, ministries and agencies responsible for education:

— Are students sufficiently prepared to take an active role as citizens in a democratic society at the end of higher education?

— do students have the ability to analyze, justify and communicate their ideas and imaginations?

— are students receiving education based on the requirements of the current labor market?

— do students meet the requirements of "lifelong learning"?

The history of international evaluation programs in the educational system actually begins in 1958 with the founding of the IEA International Educational Achievement Assessment Association in Hamburg by a number of European countries and the United States. This association was a non-governmental scientific organization. Benjamin Blum, famous in international educational programs, was also a member of this association. Benjamin Blum is an expert in objective-based learning. The famous psychometric scientist R.L. Thorndike was also a member of this association. The purpose of this association was to supplement the quality and historical development of education, the change of traditions in education with the results of the empirical program. Also, the main goal was to compare the

educational process based on the results of this program in the international framework on the basis of uniform criteria.[3]

Before the formation of this association, advanced educational programmers of the world have researched the cultural and social aspects of the educational process in different countries. In 1960, the International Association for the Study of Educational Achievement began to conduct the first international benchmarking programs. In 1964, the International Association for the Assessment of Educational Achievement conducted the first international assessment program in mathematics. One of the main organizers of this evaluation program was the German Institute of International Pedagogical Programs.

From 1966 to 1973, the "Six Subjects Survey" (Six Subjects Survey) was conducted with the participation of 21 countries with the initiative of world famous educational scientists, including J.B. Carroll. In this assessment program, an assessment program was conducted in 6 subjects: natural sciences, literature, reading, English, French as a foreign language, as well as political education subjects. At the beginning of the 1990s, the International Association for the Evaluation of Educational Achievement - IEA began to conduct an assessment program (Reading Literacy Study) for 9-14-year-old students.[4] This evaluation program inspired subsequent evaluation programs. Since 2010, international assessment programs have been held to evaluate the competencies of adults. This assessment program is organized by the Organization for Economic Cooperation and Development.

The initial approach of the countries of the Organization for Economic Cooperation and Development was focused on statistical data, which compared the funds spent by the countries on education, that is, the state financing of education and the resources of financing. Since 1992, statistical reports have been published by the Organization for Economic Cooperation and Development under the name "Education at a Glance". The educational evaluation criteria developed by this initiative of the Organization for Economic Cooperation and Development have been widely used in fields other than education, including economy, socio-political fields, and educational programs.[5]

In the late 1990s, the Organization for Economic Co-operation and Development tried to expand the criteria for evaluating education by measuring competencies achieved in education. Through this, the goal was not only to measure the financing costs or resources of education, but also to measure the results achieved in education. The experiences of the International Association for the Assessment of Educational Achievement led to the introduction of the international program for assessing the educational achievements of pupils and students. The results of the international program for the assessment of students' educational achievements have motivated the reforms of the educational policy and the improvement of the quality of education of the participating countries, and the negotiations on education. Assessment of educational achievements provides an opportunity to study the systematic features of the basic competencies of 15-year-old students in reading, mathematics and natural sciences.

Organization for Economic Cooperation and Development criteria in the field of education are changing in the next decade. Every year, educational criteria are presented to the general public in the "Education at a Glance" report of the organization. These educational criteria are developed within the framework of the "Educational System Criteria" project. These educational benchmarks include comparative information on human resources and

financial resources spent on education, educational system tasks, progress, and educational investments.

The international program for assessing students' educational achievements is one of several projects of the Organization for Economic Cooperation and Development, aimed at comparing the results of education with the acquired knowledge and skills, i.e. competencies. The content of the international program for assessing student achievement in education is focused on real everyday situations, and less attention is paid to the knowledge gained in higher education institutions. The International Program for Assessment of Student Achievement primarily examines the general skills, knowledge, and attitudes achieved by the end of education and their relationship to the knowledge and concepts in the curriculum.[6]

**RESULTS**

An international group of experts will create a general concept of international assessment, and this concept will allow the measurement of core competences. The international program of assessment of students' educational achievements is not only an impetus for important changes in the political, economic and social life of the participating countries, it is not only the main topic of the work of the general public and many scientific programs, but also the target of criticism many times. has become It is worth noting that the purpose of the program and the methods used and the interpretation of the results of the program are widely discussed. As it is known, the international program for evaluating students' educational achievements is a program related to education, economy, politics and social spheres. The program has been helping to find solutions to many problems faced by the school education system of the countries with the help of comparative comparison, it serves as the main database in determining the direction of the education policy of the countries, training specialists in the countries, and planning the economic sectors. The results of the program are analyzed in terms of different scientific program areas. In particular, in terms of educational policy, financing of education, organization of educational processes, improvement of teachers' qualifications, influence of students' parents on the educational system, etc.

The preliminary results of the International Program for Assessment of Student Achievement in Education will not be disclosed by any mass media. This shows that the Organization for Economic Cooperation and Development is the only decision-maker regarding the program, and results in the disclosure of the results due to the demands of the general public will take a long time. Also, the tasks used in the program are not presented to the general public in sufficient quantity. This directly creates difficulties for the school community, parents and those responsible for educational and regulatory documents, and leads to a lack of information in the organization of activities. According to some critics, the disclosure of program tasks would be useful, and the results are a timely tool for the development of the educational system of the participating countries. Such opinions are expressed in the critical statements of the scientific community, pedagogues, psychologists and experts in other fields with the help of mass media.

The purpose of evaluating the educational achievements of students is to have a general idea of the educational system of the participating countries during the continuous three-year cycle, to study how students are ready for the requirements of the time. The program explores core competencies rather than factual knowledge. These competencies are

the necessary basic competencies of students for society, economic and political life.

However, scientists from French-speaking countries - France, Canada, Switzerland - express their critical opinions about the purpose of this program. According to them, "the results of the program were directed in favor of the Anglo-Saxon countries" and on the other hand, the participating countries were "pressured to focus their curricula on the basic competencies needed in everyday life." Such thoughts form the basis of their criticism. As an example, the French higher education system is characterized by a focus on high accuracy. Y. Wuttke expressed his critical and scientific opinions on the selection of the main competence areas in the program: mathematics and natural sciences. As a result of the program's emphasis on these core competencies, social sciences, foreign languages, and art-related subjects have been neglected. The central areas of education - expression of one's opinion, knowledge of literature, historical, geographical, political and economic knowledge, religious and ethical knowledge are not given significant attention. H. Hunting described the concept of the program as "not encyclopedic" and "the main focus of the program is on the basic competencies that are discussed a lot among the general public, and this is the advertisement of the program." T. Yanke's scientific criticism describes the main goal of the program as "standardization of education" and the program as "joining the test industry".

Commenting on the program, F. Huisken believes that the purpose of the program contradicts the right of citizens of different countries to receive education. He explains his opinion and evaluates the program as follows: it is approached without taking into account the interests of students, the purpose of the program is unclear, and it is a concept that is scientifically contrary to educational standards." It is worth noting that there are great differences in the content of the assignments used in the program in the educational regulations or in the content of the educational plans of the assignments. Assignments mainly assess students' basic core competencies and interdisciplinary knowledge, skills, and competencies related to daily life. Questions on the subjects of the curriculum are not found in the program tasks.[6] At the same time, some samples of tasks used in the program have been presented to the general public since 2000. Some programmers have analyzed the samples of this task and assessed them as "erroneous and misleading".

Mathematician V. Meyerhofer evaluated the test tasks as "not suitable for testing mathematical skills or literacy" and described the problems in creating tasks related to mathematics as follows: "in many cases, there are several ways of solving the desired solution. This does not provide an opportunity to check the same knowledge and skills of the student. In this case, the formation of basic mathematical competencies becomes accidental. When solving tasks, the student does not pay attention to the main solution method in the task, but draws attention to what answer is desired by the examiner." At this point, V. Meyerhofer recommended that a Multiple Choice-Test (a test with several answers) be given as an assignment. Also, the scientist emphasizes that "the tasks used in the program are not theoretically based from the pedagogical and psychological point of view." These mathematics assignments are not made by applying mathematical solution methods, but by systematic division of assignments.

In addition to the tasks used in international assessment standards, critics have also focused on some aspects of the program's organizational aspects. Including the motivation of students from different countries to participate in the program. According to Sjoberg, "There are sharp differences between the forced motivation of students in Thailand or Korea and the

motivation of students in Norway or Denmark. In particular, in Thailand and Korea, singing the national anthem before program tasks is an example of mandatory motivation. Norwegian and Danish students may not like participating in this program, and therefore students are not highly motivated to complete the assignments" [7]. Also, the high results of the Chinese state are criticized, and the reason for this is the Hukou system. If you look at the results of this program, you can see that the results of Shanghai are significantly higher. In the hukou system, the permanent residence of the Chinese state is recorded for each family, and the family sends its child to a school in that area. A child cannot study at a school in another region. It is known that the social conditions of students in different countries are different. The interpretation of this social situation depending on the student's cognitive development has caused many criticisms. The results of the International Student Assessment Program will be made public two years after the program. If there is an urgent need to change the direction of the educational policy, the late release of the results of the program is not desirable in many ways. The interpretation of program results is analyzed in relation to the curriculum hours of a particular subject, for example, mathematics. Education other than OTM, including clubs, additional training, is not taken into account. Does the International Student Assessment Program Measure Intelligence? Heinke Rinderman and Ziegfried Leierl in the book "IQ and the Wealth of Nations" noted that the difference between the level of intelligence and the results of the program is between +3 and -3.

In addition, the international assessment standards do not provide an opportunity to determine the following situations:

The international program for assessing the educational achievements of students does not give an opportunity to determine which country has a "good" or "bad" education system. The international program for assessing students' educational achievements determines the status of basic competencies during the program with certain methods.

In assessing the educational achievements of students, participating countries cannot reveal the reasons why their education is "strong" or "weak". The program is an incentive to determine the possible relationship between the problems of the higher education system and the conditions for solving these problems.

**DISCUSSION**

The International Program for Assessment of Student Achievement in Education does not determine the improvement of the quality of the higher education system. The results of the program are reviewed by experts and researchers from an economic, social, and political point of view and provide information for the development of the state's education system and other areas in an integral relationship.

Werner Zacher describes the practical orientation of evaluating students' educational achievements as follows:

Determining the direction of education policy. The results of the assessment of students' educational achievements serve as a database for determining directions in the government-wide review of higher education.

Increasing innovative "literacy". Assessment of students' educational achievements helps to determine the conceptual direction of development of students' intellectual potential. In particular, students' understanding of tasks in various subjects, understanding of interdisciplinary relationships, setting of tasks, their solution and implementation are among

these. It forms the ability of students to be observant, to apply the knowledge they have acquired in their daily personal life, and in turn, it is of great importance in determining the direction for the continuous expansion of students' knowledge outside of the training sessions.

Students' lifelong commitment to education. Assessment of students' academic achievement measures their core competencies related to OET, the growth of the student's current and future attitudes towards education, increased motivation to study, the opening of student opportunities and self-efficacy. "gives an opportunity to determine the winter strategy.

Systematicity is continuity. The international program for assessing students' educational achievements is held every three years and provides an opportunity to conduct systematic, continuous national monitoring of the educational system of the participating countries and to improve the implementation of the goals of higher education. The international program for assessing students' educational achievements also requires increasing the diagnostic competence of teachers. In this, teachers are required to make a transparent, detailed, complete and honest evaluation of students' knowledge, as well as to improve their skills in this field.

Assessment of students' educational achievements requires teachers to assess the quality of assignments given to students in the learning process and review the assignment of assignments. In addition to the diagnostic competence, there is a need to increase the checking competence of teachers. Also, the program requires teachers to have the competence of self-assessment, and gives an opportunity to evaluate the effect of the psycho-social condition in the classrooms on the lesson, teacher-student relationship. Werner Sacher's assessment method for assessing student achievement is complementary to the existing assessment system for HEIs. The results of assessment of students' educational achievements are evaluated quantitatively (rating scale). In this way, the results of HEIs and then countries are compared. The international program for evaluating students' educational achievements was created based on the classic evaluation criteria: objectivity, reliability.

Assessment of students' educational achievements is a macro-diagnosis, a test and examination situation obtained from formal and educational activities. Also, this assessment is considered an external assessment and is conducted by specialists who do not work at the HEI where it is conducted.

Assessment of students' educational achievements summarizes the results by groups, OTMar, social class, gender and state of the population and provides educational information in the form of statistics for different aspects of society. This assessment is complementary to the educational and training function of HEIs. In higher education institutions, it is necessary to pay attention to the basic competences that check not only the knowledge gained in a certain subject, but also the ability of students to perform interdisciplinary and generalizing tasks of several subjects.

Contextual indicators. In the assessment of students' educational achievements, along with basic competencies, contextual indicators are also determined using the questionnaire. These indicators are aimed at determining the various factors of the formation of basic competencies. In particular, the interest of students in the educational process, the importance of studying for their lives, and the education of students in the family and in HEIs are studied. For example, it can be studied whether students' basic competencies depend on

the higher education system or educational activities, or whether they are related to the social background of students and the level of their basic competencies. These data provide direction for organizing the learning process and changing student attitudes toward learning, but also help to visualize the strengths and weaknesses of the curriculum. Education, independent education and conditions of students outside higher education institutions, the formation of academic capital in students' families are reflected in this questionnaire.

**CONCLUSION**

In addition to checking the basic competencies, the assessment of the students' educational achievements should include a questionnaire directed at the participating students, as well as their parents, teachers, and the administration of higher education institutions. This questionnaire is aimed at determining the factors related to the formation of basic competencies. Also, through this questionnaire, I can study the teaching and learning environment in the auditorium and outside the auditorium. The questions in the questionnaire intended for students determine their socio-economic and cultural background, the student's acceptance of higher educational institutions and the educational process, his personal habits and perceptions regarding the educational process. These data determine the degree of interdependence of higher educational institutions and the educational process in the formation of basic competencies.

In conclusion, it is necessary to take into account many factors and take into account the socio-pedagogical environment and conditions when evaluating the educational achievements of students.

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