**KAZAKH WOMEN’S TEACHER TRAINING UNIVERSITY**

**METHODOLOGY OF PEDAGOGICAL AND PSYCHOLOGICAL RESEARCH: DICTIONARY**

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Dictionary (to help students, magistrates and doctoral students of the specialties of the "Education" group): for doctoral students of the specialties "Pedagogy and Psychology", "Social Pedagogy and Self-Knowledge", "Pedagogical Measurements" in the discipline "Philosophy and Methodology of Pedagogy" and is developed in accordance with its a typical curriculum.

The dictionary contains about 500 terms, key concepts, knowledge of which is necessary in the implementation of research activities.

Includes concepts from several disciplines - pedagogy, psychology, philosophy, sociology, etc.

The dictionary is addressed to students of secondary and higher educational institutions, graduate students, teachers, professors, as well as people interested in the organization and implementation of research activities.

Designed for teachers of higher educational institutions, doctoral students, magistrates, students, as well as teachers-researchers of schools and pedagogical colleges.

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***If you fall asleep now, then you***

***of course, your dream will be dreamed.***

***If instead of sleep you choose***

***study, then you will make your dream come true***

***in life.***

 ***/ motivation of a Harvard student /***

**Preface**

 In recent decades, the importance of research activities has been recognized both throughout the world and in Kazakhstan. In the Resolution of the Government of the Republic of Kazakhstan dated December 27, 2019 No. 988. On approval of the State Program for the Development of Education and Science of the Republic of Kazakhstan for 2020-2025 // http://adilet.zan.kz/rus/doc. Law of the Republic of Kazakhstan dated December 27, 2019 No. 293-VІ ЗРК. On the status of a teacher // http://adilet.zan.kz/rus/doc. and other regulatory documents, it is noted that educational institutions should pay special attention to the development of scientific research and development, the formation of research behavior, the formation of research competence of students. In general, the research activity of students should contribute to the achievement of a new quality of general and vocational education.

This is primarily due to the high level of production, equipment and technology. A modern specialist should possess research skills (analyze, generalize, reflect, pose a problem, theoretically substantiate a hypothesis, choose research methods, etc.), be able to navigate the flow of scientific information, independently solve professional problems, creatively to be relevant, to use terms and key concepts correctly.

Our earlier research (E.A. Shashenkova "The task as a means of teaching research activities of college students" (2001), I.A. Zimnyaya, E.A. Shashenkova "Research work as a specific type of human activity" ( 2001) allowed us to identify and systematize the basic concepts necessary for organizing and conducting scientific research by students.

Dictionary entries define the system, stages, theoretical and empirical directions, approaches, principles and methods of research.

The interpretations of terms presented in the dictionary are both author's and borrowed from the most authoritative sources and normative documents (encyclopedias, dictionaries, monographs, teaching aids, scientific collections). Significant efforts have been made to make the dictionary more understandable for undergraduate and graduate students starting research activities. The main sources are indicated in the bibliography. Obviously, when compiling the vocabulary, it was impossible to cover all concepts and reduce them into a single, consistent integrity.

Dictionary entries are arranged alphabetically. At the end of the dictionary is a list of used literature. Generally accepted abbreviations are based on regulatory standards.

**Сhapter 1. Methodology of pedagogical research**

**1.1.Philosophy of science. The main notions of logics and methodology of science**

**ABSTRACT OBJECTS** - value formations (relations, concepts, judgments) that act as the content of human thinking. With regard to pedagogy, these include the properties of the empirical objects of pedagogy, its concepts, logical relations and inferences.

**AXIOM -** a starting position taken without proof due to its obviousness and persuasiveness**.**

**ANTITESIS** (from the Greek. Antithesis-statement, opposed to any thesis) - learning according to the principle from simple to complex or vice versa - from complex to simple.

**ARGUMENTATION** (from Lat. Argumentatio - bringing arguments) - a set of reasons or arguments to prove the provisions put forward. Generally significant argumentation is built on the basis of direct and indirect confirmation, the conclusion of the thesis from the accepted general provisions, verification of the thesis for compatibility with other laws and principles, on the possibility of empirical confirmation, inclusion in the general theory, applicability to a wider class of objects, etc. Contextual means of justification include reference to authority, tradition, faith, intuition, and various kinds of rhetorical devices.

 **ARTIFACT** (from Lat. Artefactum - artificially made) - 1) an object made by man; 2) a process or education not characteristic of a given object, obtained in the course of research.

**VALIDITY** is a characteristic of a measurement quality procedure (test, task, etc.), reflecting the conformity of the measured real quality to this procedure. Depends on the definition of the measured quality (representing one or another of its concepts), the composition of test items or questions, empirically set criteria. In order to determine the practical value of work, one must know what we mean by practical value, with the help of what criteria and procedures it can be measured. Many personality characteristics that are allocated for measurement do not have corresponding valid indicators and cannot be measured. Distinguish between conceptual validity (as the correspondence of test items to the author's concept of measured quality) and criteria validity (correlation between test results and an empirical criterion).

**LOGICAL QUESTION** - a question about the truth of some statement, to which either a positive ("yes") or negative ("no") answer can be obtained. To answer a question means to recognize as true or false a certain statement. In school practice, logical questions usually include expressions with the words: "is it true", "how much", "why", "which", "what", "where", "when", "in what", etc. ; not all such expressions are logical questions (pseudo questions). In such cases, the teacher wants to receive information about the meaningful relationship of this statement and other statements, or information about the content of this statement.

**CONCLUSION** - establishing the truth of some statements, provided that some other statements are true.

**STATEMENT -** traditionally identified with declarative sentences of natural language, considered as true (intuitively understood that the abstract content of the sentence corresponds to the actual state of affairs) or untrue (false). Depending on the character, there are analytical, disjunctive, implicative, counterfeit, conjunctive, synthetic, conditional, existential statements.

**DECOMPOSITION -** dismemberment of a complex whole (object, system) into simpler components.

**ACTIVITY** is a specific active form of human interaction with the surrounding reality, the content of which is its purposeful change and transformation in the interests of people, includes the goal, means, result and the process of cognition. The main types of human activity are game, study, work.

**DISCURSIVE THINKING -** the ability of a person to identify the properties of objects, put forward hypotheses, formulate concepts and theories, obtain new knowledge and explain existing data on the basis of connected logical reasoning and proof, in which each subsequent thought is conditioned by the previous one.

**DIFFERENTIATION** - the process of dividing the whole into parts, steps and forms.

**Sign** is a universal way of transmitting information that allows you to preserve, transmit and accumulate knowledge about the laws of nature, man and the world around you. The most important sign systems - writing, counting, map - appeared about six thousand years ago.

 **KNOWLEDGE** is the result of cognition of reality, which has been confirmed in practice and recorded with the help of natural and artificial languages. Distinguish between everyday, or commonplace, knowledge, based on common sense and everyday practical activity, and scientific knowledge (theoretical and empirical), reflecting the essential connections and relationships of things - scientific theories.

**Significance -** an object denoted by a certain symbol given by an expression looking for a certain meaning, i.e. abstract content, due to which the relationship of this expression with a specific designated object occurs. Depending on the meaning, empirical and theoretical objects are distinguished.

**IDENTIFICATION -** 1) the process of identifying an object with one of the known objects, establishing the coincidence of something with something; 2) object recognition.

**IDENTITY -** identity (coincidence) of two or more objects according to certain characteristics. For example, programs written in different languages according to the algorithm and result described in them can be identical.

 **IDEOGRAM** - a letter using conventional signs and symbols. See pictography

**INTEGRATION** is a process of convergence, communication of sciences, parts, interpenetration of cultures. See Differentiation.

 **CRITICISM** (from the Greek. Kritike - the ability, art to disassemble, judge) - a characteristic analysis, analysis, evaluation of work, an object based on the analysis of its properties and relations with other objects. Depending on the degree of correspondence of the analytical characteristics of the object to the object itself, objective (adequate) and subjective (inadequate, erroneous) criticism are distinguished.

 **LOGOS** is one of the basic concepts of ancient Greek philosophy, simultaneously denoting "word" and "meaning", Cosmic mind, Law, order and harmony of the world. Introduced by Heraclitus as a universal meaningfulness, rhythm and proportionality of being.

**MEASURE** - 1) a philosophical category expressing the dialectical unity of quantity and quality, indicating the limit of stability, beyond which quantity leads to a change in quality; 2) proportionality at the heart of rhythm, harmony in music, architecture; 3) compliance with opportunities (for example, the availability of training, the measure of encouragement and punishment, etc.).

 **METATEORY -** a theory that studies the structure, language and properties of another (subject or object) theory. The most developed metatheories are logic and mathematics, in pedagogy - methodology.

**THOUGHT** is the main unit of thinking, expressed in understanding the world, oneself, other people, means and objects of their joint activity.

 **OBJECT** is a philosophical category that expresses what is opposed to the subject in his objective-practical and cognitive activity. Objective reality exists independently of a person and his consciousness, acts as an object for the cognizing individual in the forms of his activity, language and knowledge, developed in the course of the historical development of society. Abstract objects include concepts, relationships, judgments, and other value formations that act as the direct content of human thinking (natural numbers, properties of empirical objects, logical relationships, inferences, mathematical structures, scientific and philosophical concepts). Individual objects include objects given to a person in empirical experience. Unlike abstract objects, they are perceived with the help of various senses, exist in space and time, and have corresponding space-time characteristics.

**OPERATION** is a concept in the theory of activity, introduced by A. N. Leontiev, used in the study of relatively independent, complete, automated perceptual, motor, intellectual, mnemonic acts that are part of an action; a set of actions aimed at achieving a specific goal. **PARADOX** is an unexpected conclusion that contradicts generally accepted results, opinions, statements.

 **PICTOGRAM -** a conventional designation of an information object or operation using graphic symbols. It is used in interactive systems with direct user interaction, in a graphical shell such as Windows.

 **PICTOGRAPHY -** writing using pictures. See Ideogram.

**PRACTICE** (from the Greek. Praktikos - active, active) - material, goal-setting activity of people; assimilation and transformation of objective reality; the basis for the development of human society and knowledge. In terms of content and method of implementation, it is social in nature, includes a need, goals, motive, purposeful activity, object, means and result, provides science with factual material for theoretical comprehension, determines the content and direction of human thinking.

 **SUBJECT -** object, thing, internal semantic unity, individual form; in logic, everything that can be in a relation and have some property. The main types of objects: thing - a physical object; a concept is a logically conceivable subject; condition as thing.

 **SUBJECT AREA -** objects studied in the framework of a theory, as well as properties, relations and functions considered in the framework of this theory. The subject area in didactics can be teaching methods, in upbringing - educational systems; any fixed area containing one or many items.

**TRANSFORMATION -** a significant change or replacement of one structure with another.

**DESIGN ACTIVITY** - activity to create a prototype, a prototype of an alleged or possible object, state, system.

**REFLEXION** - the ability of a person to comprehend his own experience in order to come to a new understanding, evaluate and substantiate his own beliefs and value relationships. Includes the construction of inferences, generalizations, analogies, comparisons and assessments.

**SOFISM -** reasoning containing a hidden logical error, with the help of which a lie is passed off as truth.

 **Specificity -** a set of certain signs, features that distinguish a given object, process, object from another.

**STRUCTURE** - a stable set of connections of an object, ensuring its integrity and functioning, the connection between the constituent elements.

**STRUCTURE OF SCIENTIFIC KNOWLEDGE -** a complex hierarchical structure, including local (empirical and theoretical) knowledge on certain problems of training and education; knowledge that constitutes an entire scientific field (didactics, theory of education, history of pedagogy, etc.), knowledge that represents the entire pedagogical science.

**JUDGMENT** - a thought (true or false), expressed in the form of a sentence, with the help of which two concepts (subject and predicate) are connected. In logic, the term "statement" is usually used, denoting a grammatically correct sentence, taken together with the meaning it expresses. See Statement.

 **ESSENCE AND PHENOMENON** are philosophical categories. The essence reflects the inner content of the object, expressed in the unity of all its diverse properties and relationships; phenomenon - certain external forms of manifestation and existence of an object. In theoretical knowledge, the essence first appears as something opposite to the phenomenon. Then, on the basis of the essence, the phenomenon will receive an explanation, a system of knowledge about the subject is formed - a theory that reflects the most profound and complete knowledge about the subject. Thus, cognition acts as a level of comprehension of an object (from phenomenon to essence).

**FACTOR** - the reason, the driving force of any process, the phenomenon that determines its nature, direction, signs.

**PHILOSOPHY** is a science that isolates the common features of various theories.

**ANALYTICAL PHILOSOPHY** is one of the main modern philosophical trends, characteristic primarily of the English-speaking world. Its peculiarity lies in careful linguistic and logical analysis, understood as an indispensable means of achieving the greatest possible scientific clarity. The most prominent representatives of analytical philosophy are L. Wittgenstein, R. Carnap, W. Quine.

**HERMENEUTIC PHILOSOPHY** is one of the main modern philosophical trends, within which all concepts are grouped around the problem of mutual understanding of people in the process of their dialogue with each other. The largest representatives of this trend are V. Dilthey, H.-G. Gadamer and Y. Habermas.

**DIALECTIC PHILOSOPHY** is a philosophical trend, within which dialectical contradictions are the driving forces of everything that happens. In science, the concept of dialectical contradiction is considered false. The largest representatives of dialectics are G. Hegel and K. Marx.

**PHILOSOPHY OF SCIENCE** - metascience, the subject of which is criticism, problematization and thematization of basic sciences.

**PHILOSOPHY OF SCIENCE** is a field of philosophy that studies science as a specific area of ​​human activity and as a developing system of knowledge.

**PHILOSOPHY OF SCIENCE -** metascience, the subject of which is criticism, problematization and thematization of basic sciences**.**

**GENERAL PHILOSOPHY OF SCIENCE** - a discipline that summarizes the provisions of the philosophy of basic sciences. The most important task of the general philosophy of science is to study interdisciplinary connections at the meta-level.

**SPECIAL PHILOSOPHY OF SCIENCE** - a set of disciplines, each of which is the philosophy of one of the sciences, such as physics, ecology, psychology.

**POST-STRUCTURAL PHILOSOPHY** is one of the main modern philosophical trends, the core of which is the problem of pluralism. The most prominent representatives of the trend are M. Foucault, J. Derrida and J.-F. Lyotard.

**PHENOMENOLOGICAL PHILOSOPHY** is one of the main modern philosophical trends, within which concepts are understood as a synthesis of experiences.

 **Esoteric -** a secret meaning inaccessible to the uninitiated.

**1.2. Philosophy and Methodology of Pedagogy**

***1.2.1. Philosophical justification***

**PHILOSOPHY OF PEDAGOGY AND EDUCATION** is a metascience, the subject of which is pedagogical sciences, as well as educational issues, taken from a general cultural aspect. The entire history of philosophy is marked by the stamp of interest in pedagogy.

**PHILOSOPHY OF UPBRINGING -** the interpretation of the essence of upbringing, its principles and values ​​as the interaction of the universal, concrete-historical, national components of culture in the process of personality formation and the transfer of cultural values ​​to it.

**PHILOSOPHY OF SOCIAL EDUCATION** is a scientific direction that, on the basis of knowledge about the objective state and needs of society, obtained by the sociology of education and social pedagogical victimology, raises a number of fundamental questions, offers options for their solution, which can make the integration of the forces of society successful in order to increase the cultural level of the people.

**PHILOSOPHY OF PEDAGOGY** is the field of pedagogical science of science, revealing the system of using the innovative potential of philosophical laws, approaches, principles, categories, methods, philosophical knowledge (logic, ethics, aesthetics, etc.) necessary for pedagogical research.

***1.2.2. Conceptual and terminological apparatus of pedagogy***

**DIVISION OF THE CONCEPT** is a logical operation of dividing a concept into groups, parts, as a result of which additional content (new features) is formed for all or some groups, parts, members of the division. See Definition of concepts.

**CLASSIFICATION OF CONCEPTS -** parallel or sequential division of the concept, in which for each division, in the case of multiple, the division base remains unchanged, the volumes-parts exclude each other and exhaust the original volume. The classification of concepts can be parallel or sequential. In parallel classification, the volume of the original concept is divided many times over several independent division bases. In a sequential classification, the dividend concept is divided multiple times according to several independent division bases.

**METHODOLOGY OF ORDERING PEDAGOGICAL TERMINOLOGY** - a set of rules and regulations for creating a conceptual and terminological system of pedagogy with given properties.

**GENERAL CHARACTERISTIC OF ORDERED TERMINOLOGY OF PEDAGOGY -** any quality, property of a system of concepts or a system of terms of pedagogy, which can be extended to the conceptual and terminological system of pedagogy as a whole.

**SCOPE OF THE CONCEPT** - a set of empirical and abstract objects to which the concept under consideration is inherent as a property.

**DEFINITION OF THE CONCEPT** - disclosure of the content of the concept based on the enumeration of a set of essential features.

**THE BASIS OF DIVISION** is a feature according to which the volume of a pedagogical concept is divided (for example, theoretical or empirical studies, depending on the application of an experiment in them).

**CONCEPT -** 1) mental display in the form of an artificial unity of the common essential features of objects; 2) the form of thinking, which reflects the essential and distinctive features of a separate object or class of similar objects; 3) a thought in which objects are generalized into a class and allocated according to a system of attributes common to these objects and distinguishing them from other objects. 4) a form of thinking that reflects and fixes the currently essential features of things and phenomena of objective reality.

**CONCEPT-TERMINOLOGICAL SYSTEM OF PEDAGOGY** - a system of pedagogical terms, the set of real meanings of which is a system of pedagogical concepts.

SIGN - everything in which the objects of thought are one with another or how they differ.

**SYSTEM OF CONCEPTS** - a set of interrelated concepts belonging to the entire pedagogy, its separate area or private methodology.

**SYSTEM OF TERMS** - a set of terms related to the relationship of an ordered nomination with a system of concepts.

**SYSTEMATIZATION OF CONCEPTS -** identifying the structure of the system of pedagogical concepts, grouping them in accordance with the traditional division of the discipline or field of knowledge, as well as the need for their distribution into categories: subjects (materials, tools, tools, etc.); processes (phenomena, properties); quantities (parameters, geometric patterns, etc.); units of measurement, etc.

**CONTENT OF THE CONCEPT -** 1) a set of essential features of the subject of thought; 2) a set of essential features of an object (thing, phenomenon) of objective reality, which has become the subject of thought.

**TERM PEDAGOGICAL** - a verbal definition of a pedagogical concept in the system of concepts of pedagogy in the form of a word or phrase serving as a name.

**PEDAGOGICAL TERMINOLOGY -** a system of ordering methods, bringing into communication a set of own concepts of pedagogy based on the formulations of their definitions, as well as in the nominations of this set (system) in order to impart a scientific and normative character to terms.

**FORMULATION OF THE DEFINITION OF THE CONCEPT -** enumeration of the aggregate features recognized as integrally essential for the subject of thought, in a certain system of concepts.

***1.2.3. Researcher's Dictionary***

**DISSERTATION ABSTRACT**- a summary by the author of the scientific results of the dissertation research, reflecting the goals and objectives, hypothesis and novelty, structure, logic, process and conclusions of the research.

 **ACADEMIC - the title of a full member of the academy, elected by the general meeting of a particular Academy (RAO, RAS, etc.).**

 **SCHOLARLY** - observing established traditions in science, art or education.

 **ACMEOLOGY** is the science of a person reaching the top, maturity in his development, personal and professional growth.

 **PEDAGOGICAL AXIOLOGY** is a branch of pedagogical science, the object of which is human values ​​and the ways of their development in subjects of the pedagogical process in the conditions of the pedagogical system, covering theoretical and practical problems.

 **AXIOM (in pedagogy)** - a position taken as the starting point in the development of a pedagogical concept or the construction of a pedagogical theory.

 **THE RELEVANCE OF THE RESEARCH** is a reflection of the socially pedagogical importance, significance for the development of pedagogical science and the timeliness of the research conducted to improve pedagogical practice.

 **ANALYSIS** (in pedagogical research) is a procedure for dividing the subject of pedagogical research into parts, highlighting the main features, properties and relationships.

 **ANDRAGOGY** is a branch of pedagogical science that reveals the theoretical and practical problems of teaching, upbringing and education of an adult throughout his life.

 **ANTHOLOGY (pedagogical)** - a collection of selected pedagogical essays (or their fragments) by different authors.

 **ANTHROPOLOGY (pedagogical)** - a branch of pedagogical science about human nature, sources and factors of its development, training and education.

 **APPARATUS OF PEDAGOGY** - a set of basic categories, concepts, patterns, principles, hypothetical provisions, methods and means, theories and systems, each of which performs its function in understanding and disclosing the process of development of pedagogy as a science and practice.

 **POSTGRADUATE STUDENT** (in the direction of "Pedagogy") - one who purposefully and under the guidance of a scientific supervisor prepares for research activities within the framework of the postgraduate program in the direction of "Pedagogy", is directly included in the scientific search on the topic of research, prepares to write and defend a Ph.D. thesis.

 **POSTGRADUATE STUDIES-** a system of systematic training of scientific and pedagogical personnel (candidates of sciences) at a higher educational institution under the guidance of leading scientists of the higher educational institution.

 **ASSISTANT** - junior teaching position in higher educational institutions, assistant professor and associate professor of the department.

 **CERTIFICATE -** an official document on graduation from an educational institution (certificate of maturity at the end of secondary school) or on the award of a title (associate professor or professor).

 **CERTIFICATION WORK** - officially recognized work, the implementation of which in accordance with the established requirements and norms, with a positive assessment, allows you to make a certain recommendation or give a characteristic - to recognize the completion of the thesis at the end of the university, or to recognize the implementation of the master's program (postgraduate study, doctoral studies) and receive a recommendation for defense master's (candidate's, doctoral) dissertation.

 **BACHELOR** - a student who graduated from the bachelor's degree- the first stage of higher professional education in the conditions of an educational institution working on a multilevel education program.

 **BACHELOR’S DEGREE** - 4-year higher education program as the first stage of a multi-level system of modern higher education.

 **BIBLIOGRAPHY** (scientific research) a list of literature sources (monographs, collections, dictionaries, journals, practical recommendations), as a rule, in alphabetical order on the topic of research.

 **VALIDITY** - compliance, consistency of the research method with the accepted criteria.

 **INTRODUCTION** (dissertation, book, textbook) - an introductory article by the author, in which, in a condensed form, briefly and clearly reveals the main idea and essence of the work.

 **IMPLEMENTATION OF RESEARCH RESULTS** - introduction of a developed new method (pedagogical system, principle, etc.) into the pedagogical practice of various teachers, which really convinced both researchers and practitioners of its effectiveness and recommended for mass use. Conclusion in pedagogical research is the most important results of pedagogical research in the form of inferences reflecting the attitude to the hypothesis, goals and objectives of the research, from which novelty, theoretical and practical significance are isolated.

 **SCIENTIFIC REPORT PRESENTATION** - a public speech about the results of scientific research, methods and logic of research, conditions and limits of applicability of new pedagogical results.

 **HYPNOPEDIA -** teaching a person and educating him during sleep.

 **HYPOTHESIS** is a scientifically grounded assumption, a researcher's assumption about the essence of a pedagogical phenomenon, process or pedagogical system, about the ways and means of obtaining new pedagogical knowledge, requiring experimental verification and scientific proof.

 **GLOSSARY** - a dictionary of basic terms and concepts used in the research.

 **EPISTEMOLOGY (**pedagogical) is a branch of pedagogical science about the teacher's knowledge of his students and himself, about the essence and nature of the cognitive activity of students, about the nature and methods of developing cognitive interest in students, about the nature and means of scientific and creative knowledge of schoolchildren and students, teachers and teachers.

 **HUMANISTIC PEDAGOGY** is a direction in pedagogy that focuses on free choice and consideration of individual personal interests and capabilities of subjects of the pedagogical process in teaching, upbringing and education.

 **DEDUCTION** - the transition from general pedagogical knowledge about phenomena and processes of a certain type to private knowledge about individual phenomena and processes; the way of thinking of the researcher, in which a new position is deduced by the logic of the transition from general provisions to particular conclusions, the form of the relationship between the general and the particular in the study; method of pedagogical forecasting.

 **REALITY PEDAGOGICAL -** the world of really functioning pedagogical processes and objectively existing pedagogical phenomena in the pedagogical practice of a person. In all the variety of their forms, connections and relationships.

 **ACTIVITY APPROACH** - the principle of studying pedagogical phenomena and the processes of their development, when the activities of the subjects of the pedagogical process are considered at the basis of the study of education, upbringing and development.

 **PEDAGOGICAL ACTIVITY** - the work of a teacher as a form of active attitude to pedagogical reality is prompted by the need for the transfer of social and personal experience, teaching, teaching, guidance and assistance by pedagogical means; carried out by the teacher as a subject of activity and is characterized by motives, purpose, object of pedagogical influence, means, the very process of transforming the object and the result.

 **DIAGNOSTICS (pedagogical)** - a system of activities for the study and determination of the state of development of the pedagogical process, the pedagogical system, as well as its objects and subjects.

 **DIALOGUE - exchange of information, methods of activity, opinions, judgments, views and assessments in a non-pedagogical process.**

 **DIDACTICS is a branch of pedagogical science that includes the theory, methodology and practice of organizing training.**

 **DIPLOMA (**Master's, Candidate of Science, Doctor of Science) - an official document on the award of a master's degree, candidate or doctor of science.

 **DIPLOMA WORK** - independent written work as a result of research activities, scientific research and design, performed by a student in the last year of study at the university; is a form of verification and assessment of his readiness for independent work in his specialty, is defended before the state examination committee of the graduation course of the university with a decision on the issue of assigning the appropriate qualification.

 **DISSERTATION** - a qualifying scientific work prepared and defended by the author in the academic council of a scientific or scientific and educational institution for obtaining an academic degree (master, candidate or doctor of science).

 **EVIDENCE OF CONCLUSIONS AND GENERALIZATIONS** - a system of logical actions of the researcher with the presentation of arguments and facts in order to substantiate the truth and reliability of the new results, conclusions and conclusions drawn.

 **REPORT** (scientific) - a public statement of a researcher, which is a statement of the results of his scientific research, design, experiment.

 **DOCTOR OF PEDAGOGICAL SCIENCES** - the highest academic degree awarded to a candidate of sciences - a scientific worker as a result of the defense of a doctoral dissertation or a scientific report prepared on the basis of a set of published scientific works on the research topic; and also the person who has been awarded this degree.

 **DOCTORAL STUDENT** - a researcher attached to a scientific or scientific and educational institution for the preparation of a doctoral dissertation.

 **DOCTORATE -** the highest level and form in the system of systematic training of scientific and scientific-pedagogical personnel of the highest qualification of doctors of science; part of a person's lifelong education system.

 **DOCTRINE** is a scientific or philosophical theory that acts as a state strategy (dogma) in the organization and development of the education and upbringing system of a person in a certain historical period in the development of society and the state.

 **ACHIEVEMENT IN SCIENCE** - meaningful disclosure and clear, capacious and precise formulation of the result obtained in the course of research as objectively new pedagogical knowledge, indicating its place in the system of scientific and pedagogical knowledge.

 **RELIABILITY OF RESEARCH RESULTS** - information, including statistical information, revealing the degree of truthfulness of the results obtained, their reliability and repeatability in the course of the study.

 **ASSOCIATE PROFESSOR -** academic title or position of a university teacher who has at least the degree of candidate of sciences.

 **TASK (pedagogical)** - the teacher's awareness of the need to transfer an object or subject of pedagogical influence from one state of training, education, development to a new state, higher in terms of training, education, development, and the search or selection of the necessary pedagogical tools and conditions for this.

 **CONCLUSION IN SCIENTIFIC RESEARCH** is the last and final part of scientific work, in which conclusions are formulated about the course, stages, logic and degree of compliance with goals, hypothesis and results obtained.

 **REGULARITY** (in pedagogy) is an objectively existing, steadily manifested, essential connection and relationship between pedagogical phenomena or aspects of the pedagogical process.

 **THE INTENTION OF THE RESEARCH -** the main conceptual Idea, the strategy of scientific research developed for it and the plan of action of the researcher.

 **DEFENSE OF THE DISSERTATION** (project, diploma) disclosure and reasoned defense (based on the data obtained during the research) of the novelty, scientific and practical significance of the results of their dissertation research at a meeting of the scientist (dissertation) council of a higher educational institution or scientific institution.

 **RANK (scientific)** -officially awarded by the Higher Attestation Commission qualification of a scientist (associate professor or professor), which determines the degree of official position and position as a teacher at the university.

 **METHODOLOGICAL KNOWLEDGE** is the result of mastering the methods and principles of the development of pedagogical science, knowledge of sources, approaches and means of obtaining new pedagogical knowledge.

 **PEDAGOGICAL KNOWLEDGE** - an adequate reflection of pedagogical reality in the mind of a person in the form of ideas, concepts, judgments, patterns and theories about what, how and why to improve in pedagogical practice and the activities of teachers.

 **THEORETICAL KNOWLEDGE** - a set of fundamental information obtained in the course of scientific knowledge and research of pedagogical reality and expressed in the form of principles, laws, models and theories.

 **EMPIRICAL KNOWLEDGE** - a set of scientific facts about pedagogical reality, obtained through the use of empirical research methods (observation, conversation, experimental work, experiment, etc.).

 **THE IMPORTANCE OF RESEARCH RESULTS -** the importance of research results for the development of pedagogical science and practice (theoretical and practical value), the role and place of the research in the development of science and practice.

 **IDEA** (pedagogical) is the main idea in the mind of a teacher, reflecting his attitude to pedagogical reality and determining the content of his pedagogical activity.

 **PEDAGOGICAL IMPROVISATION** - the organization of the pedagogical process without preliminary understanding and deliberation, the activities of the teacher without a premeditated goal and plan, without purposeful preparation; quick response to emerging pedagogical problems and tasks and new, as a rule, their creative solution in rapidly changing situations that spontaneously arise in the process of pedagogical interaction.

 **INDUCTION** - a way to study particular phenomena and processes; obtaining specific scientific and pedagogical facts and the transition from them to the search for general trends, patterns and types of connections, that is, to general conclusions and conclusions.

 **INNOVATION** (pedagogical) - everything new, introduced into the well-known pedagogical systems and traditionally organized pedagogical process in a given historical-temporal period of the development of pedagogical practice.

 **INTUITION** (of a scientist) - a flair, a subtle understanding of the nature of the studied pedagogical object, a holistic grasp of the object and the conditions of its research, as well as an unconscious choice of the most correct, effective ways and methods of its study, penetration into the very essence of the researched.

 **RESEARCH** (pedagogical) - the process and result of scientific research of a class of pedagogical phenomena and processes; the course of solving a pedagogical problem using scientific methods and scientific achievements, including the stages of setting the problem and analyzing the conditions for its solution, formulating a hypothesis, planning and organizing an experiment, conducting an experiment, analyzing and summarizing the results obtained, formulating new facts and patterns, implementing the results; scientific work of a teacher-researcher.

 **RESEARCHER** - one who is engaged in scientific research.

 **RESEARCH METHODS -** used in the course of scientific research (theoretical and empirical, general scientific and methods of specific sciences).

**RESEARCH ABILITY** - the ability to plan and carry out a scientific search, develop an idea, logic and research program, select scientific methods and skillfully apply them, organize and carry out experimental work, process, analyze and formalize the results obtained in the form of a scientific text, formulate conclusions and successfully to protect them before the community of leading scientists and specialists in this scientific field.

 **TRUTH** is a pedagogical position that objectively reflects pedagogical reality, confirmed by pedagogical experience and the results of scientific research, tested in practice.

 **CANDIDATE OF PEDAGOGICAL SCIENCES** - a scientific degree awarded to a person who has successfully passed the candidate exams (in a foreign language, philosophy and pedagogy), published the main content of his dissertation in print and successfully defended it at the academic council in the pedagogical specialty (13.00.01; 18.00.02; 13.00.06; 13.00.08, etc.). **CATEGORY** (pedagogical) - the most general and fundamental concept in pedagogy, reflecting the general properties and relations of pedagogical reality; the key moment of cognition of pedagogical reality.

 **DEPARTMENT -** the main educational and scientific division of a higher educational institution, whose employees carry out educational, methodological and research work in one or several rare disciplines, training scientific and pedagogical personnel in their discipline and improving the qualifications of their specialists; headed, as a rule, by a professor.

 **QUALITATIVE ANALYSIS OF THE RESULTS OF PEDAGOGICAL RESEARCH -** a way to study the nature of the development of the studied pedagogical object, classification of research results according to changing signs of a pedagogical phenomenon and properties of the pedagogical process, analysis of the manifestation of these properties and relationships in specific conditions of experimental work.

 **QUALITY OF PEDAGOGICAL RESEARCH** - a set of characteristics of pedagogical research, according to which its effectiveness for the development of science and practice is assessed and discovered: the ratio of the object and the subject of research, goals and objectives, hypotheses and results obtained, reflecting the degree of novelty, theoretical and practical significance of the research results.

 **QUALIMETRY (pedagogical)** - a direction in pedagogy that reveals the methodology, theory and practice of complex measurement and assessment of the quality of pedagogical objects, phenomena and processes.

 **CLASSIFICATION IN PEDAGOGICAL SCIENCE** - the distribution of pedagogical phenomena and processes into classes and types in accordance with the selected features: according to the structure, conditions or form of manifestation, the nature or level of activity of the participants in the pedagogical process, etc.

 **QUANTITATIVE ANALYSIS OF THE RESULTS OF PEDAGOGICAL RESEARCH -** determination of the quantitative ratio of the components that make up the analyzed pedagogical object; assessment of the degree of completeness, form and tightness of connections between components and their features; the frequency of manifestation of both individual elements of the pedagogical object, and the whole picture (in numbers, percentages, etc.).

 **COMPETENCE (methodological) -** readiness and ability for scientific research, which presupposes the manifestation of a methodological culture, skills to organize efficiently and efficiently, conduct pedagogical research, process the results and draw conclusions, draw up a scientific text that reflects the results and progress of scientific research, be able to clearly and clearly present and defend your results. This is a special type of organization of knowledge and research skills, as well as a set of personal qualities necessary for conducting scientific research.

**CONSTRUCT (pedagogical) -** the result of the development of a pedagogical model, or pedagogical technology, or a pedagogical system with the implementation of a project for its practical implementation (testing, organization or implementation) and the selection of features, parameters and criteria for assessing its effectiveness.

 **CONSTRUCTOLOGY** (pedagogical) -direction in pedagogy -theory and practice of developing new pedagogical constructs.

 **PEDAGOGICAL CONTEXT** - a relatively complete text fragment, where the meaning and significance of pedagogical phenomena, processes, the nature and type of teacher's activity, the selection of pedagogical tools and conditions in which pedagogical processes take place and which fully contribute to their effectiveness and efficiency are most accurately revealed. **THE PEDAGOGICAL CONFERENCE** is a meeting of scientists and practitioners (educators-researchers) to discuss the most pressing problems, ways and methods of development of pedagogical science and practice.

 **CONCEPTOLOGY** (pedagogical) is a direction in pedagogy that reveals the theory and practice of developing pedagogical concepts and concepts.

 **CONCEPT (**pedagogical) system of leading ideas, revealing the interpretation of the essence of a pedagogical object, as well as a system of principles and methods, with the help of which a way of understanding and transforming a selected pedagogical phenomenon, process or pedagogical system is revealed.

 **EVALUATION CRITERION** is a characteristic underlying the evaluation process.

 **METHODOLOGICAL CULTURE -** the degree of development and manifestation of the orientation of the researcher's personality, his methodological competence and methodological reflection in the process of research activities.

 **THE CULTURE OF THINKING OF THE TEACHER -** the degree of flexibility, independence of thinking and creative thought in the process of the teacher's activity; a set of qualities that accompany and ensure the effectiveness of the teacher's thinking process during the analysis of conditions and the choice of means for solving pedagogical problems in various pedagogical situations, including new, unexpected and conflict situations.

 **PEDAGOGICAL CULTURE -** the degree of perfection, efficiency and effectiveness in the activities of a teacher, in solving pedagogical problems and situations.

 **PERSONAL APPROACH -** the attitude of a teacher who realizes himself as a person to a student or pupil as a person and a subject of pedagogical interaction, taking into account his individual characteristics in development, behavior and relationships.

 **LOGIC OF RESEARCH -** rules, procedure, structure and stages of research.

 **MAGISTRATE -** researching for a bachelor's degree, obtained at the stage of completion of studies in a magistracy and as a result of defending a master's thesis; a student studying for a master's degree.

 **MASTER'S DEGREE PROGRAMME** is the last step in the multilevel system of higher professional education (duration of study is 2 years).

 **INTERDISCIPLINARY RESEARCH** - a study carried out in the process of studying an object that admits the possibility of applying the methods of different sciences.

 **RESEARCH METHODOLOGY -** a certain way of conducting research, reflecting the nature of the selection of methods and their systematization; algorithm for designing and organizing research.

 **METHODOLOGICAL SUPPORT OF RESEARCH -** ideas, provisions, theories, principles, approaches and methods on the basis of which the research is planned, developed, carried out and each of which is used in its own time and in the right place during the research.

 **METHODOLOGIES OF PEDAGOGY** - the science of the methods and principles of the development of pedagogy as a science and practice.

 **METHODOLOGY OF PEDAGOGICAL RESEARCH -** a direction in the methodology of pedagogy, revealing the ideas, principles, methods, logic and technology of organizing and conducting pedagogical research, criteria for assessing its quality.

 **METHODS OF PEDAGOGICAL RESEARCH -** a set of methods and techniques for studying, learning and transforming pedagogical reality.

 **RESEARCHER'S WORLD VIEW** - a holistic view of an object and methods of its research, a system of views and beliefs, opinions and assessments in relation to the methodology, technology and practice of scientific research.

**MODEL** is a schematic, symbolic representation or simplified description of a pedagogical phenomenon or process as a system, revealing its most essential properties and relationships.

 **MONITORING -** control over the change and development of a pedagogical object with a systematic and consistent tracking of the results and constant familiarization with these results of the participants in the process being examined.

 **MONOGRAPH** is a scientific work in which the most fully and based on the results of research, including the author's, generalizes the urgent and fundamental for science problem with the advancement of new hypotheses and analysis of ways to solve them, revealing the prospects for the development of the entire science or its certainty in the industry.

 **MUSEUM PEDAGOGY** is a branch of pedagogy, which reveals the theory and practice of teaching and educating a person by means of a museum, its environment and conditions.

 **OBSERVATION** is a research method, the essence of which is the deliberate, systematic and purposeful perception of pedagogical phenomena and processes, fixing the forms and types of their manifestations, actually contemplated and specially recorded information about these phenomena and processes, & also about the subjects of the pedagogical process, their judgments, actions and actions.

**RELIABILITY** (of forecasts, projects) is one of the quality criteria related to the accuracy of forecasts, projects or measurements and evaluations in the course of pedagogical research.

 **DIRECTION OF THE PERSONALITY OF THE TEACHER-RESEARCHER -** the motivational conditionality of the actions of the researcher in the process of cognition and transformation of pedagogical reality, in the course of scientific research, organization of the experiment and protection of their results.

 **SCIENCE (pedagogical) -** a system of scientific knowledge about non-pedagogical reality, its laws and essential properties, & also ways of studying and transforming it.

 **SCIENTIFIC DISCIPLINE -** a qualitative characteristic of the order and logic of the development of a scientific area of ​​knowledge, as well as methods and methods of its development, presented in the form of the content of a training course in a higher educational institution.

 **SCIENTIFIC AREA -** a part of systemic scientific knowledge that reflects the course and results of the studied pedagogical reality for some reason (pedagogical goal-setting or the effectiveness of pedagogical activity).

 **SCIENTIFIC BRANCH -** a system of scientific and pedagogical knowledge about a qualitatively Homogeneous group of pedagogical phenomena and processes that play a certain role in understanding and explaining pedagogical reality, as well as ways and methods of their cognition and transformation (for example, social pedagogy or preschool pedagogy).

**1.3. Research methods**

**AUTOBIOGRAPHIC METHOD -** a method based on examples of studying memories, an autobiography written by the author himself. It allows you to better understand the ways of personality formation, to identify various aspects of the complex nature of a person, to determine the factors that influenced the choice of an individual's profession, making vital decisions. The genre originated in antiquity and has had a great influence on parenting novels, which are centered on the authorized history of the process of education and training of the individual. Despite the limited application, the possibilities of the method are quite large. This is illustrated by the recently published textbook "The Nature of the Child in the Mirror of Autobiography" by examples of studying the memories of famous people of the 19th and 20th centuries. about his childhood and adolescence.

**AXIOMATIC METHOD** is a method of constructing a theory in the form of initial positions of the system (postulates) and inference rules (axioms), which allow, by logical deduction, to obtain a statement (theorem) of a given theory. It finds limited application in the exact sciences, since it requires a high level of development of meaningful theory.

**ANALYSIS -** 1) division of the object into its component parts; 2) mental or actual division of the object of an object or phenomenon into parts in order to discover its previously unknown properties and qualities. The initial stage of pedagogical research, as a result of which a transition is made from a general description of an object, process, phenomenon to the identification of its internal composition, parts, elements. The correctness of the analysis is checked during the synthesis and verification of the properties of a newly created object or hypothesis with the original object or hypothesis.

**ANALOGY -** 1) similarity in any relation between objects, phenomena or concepts; 2) a general scientific method of research, a type of inference that allows you to identify the properties of one object on the basis of its similarity with another. The knowledge obtained when considering an object (model) is transferred to another object (object, phenomenon, process), which is less studied or available for research. This method is widely used to develop various kinds of classifications, information retrieval languages, etc. ; is not a rigorous method of proof, since the conclusion is divided on the basis of partial similarity between the studied objects, processes, phenomena.

**QUESTIONNAIRE** - a questionnaire, independently filled out by the respondent according to the rules specified in it. The questions of the questionnaire are divided according to their content: questions about facts, actions in the past, in the present, as well as about products of activity, questions about the motives of activity, assessments and opinions of individuals; by form: open (do not determine either content or form) and closed (alternative, with multiple choice, in which the respondent chooses one or more answers from the proposed ones). The questions of the questionnaire should be formulated as accurately as possible, clearly, unambiguously, in a language accessible to students. The vocabulary, terms, the degree of accessibility of concepts must correspond to the level of the respondents. Questions should not lead the respondent to a specific answer, predetermined, socially desirable answers should not be used, questions aimed at obtaining information that the respondent does not have should be excluded.

 **QUESTIONNAIRE SURVEY -** a method of obtaining information based on interviewing people to obtain information about the actual situation of yours (for example, opinions and attitudes of various groups of students and teachers about various aspects of the educational process, teaching method). The questionnaire method is used in cases where the problem under study is difficult to study by other methods (for example, the motives for choosing a teaching profession, the degree of satisfaction with this activity).

 The reliability of the information obtained by the questionnaire is assessed in preliminary tests (aerobatics of the questionnaire), in which the ambiguity of understanding the questions, the reproducibility of the answer (when the same persons are repeated), the completeness and validity of the proposed answer options are determined. The problems most significant for the purposes of the survey unfold into a system of basic and control questions, spatially separated in the questionnaire. The results of the questionnaire are prepared for manual or machine processing. The scientific value of the questionnaire depends on the theoretical basis of the study, the nature of the initial hypothesis, and the objectives of the study. The information obtained by the questionnaire is compared with data from other sources: document analysis, interviews, observations.

**CONVERSATION** is a method of obtaining information based on verbal (verbal) communication between the researcher and the respondent, answering the questions posed by the research program. It is used at the stage of preparing mass questionnaires in order to determine the area of ​​research, to formalize questions and answers on the questionnaire, to replenish and refine data from mass statistics, as an independent method for collecting psychological and pedagogical information - in surveys of small samples.

**TWIN METHOD -** a method based on comparing identical (monozygous) twins with an identical genotype and fraternal (dizygotic) twins, whose genotypes differ, as in ordinary siblings. Comparison of intrapair similarity in different groups of twins makes it possible to determine the relative role of the genotype and environment in the determination of the trait under study.

 Long-term observations of twins throughout their life, testing in different countries of children and adults allow following conclusions about the significant influence of education, upbringing and cultural environment on human intelligence. The greatest difference between the twins in terms of mental development was in direct proportion to the time they spent in school. Unfavorable family environment, incomplete family, long illness, upbringing in orphanages, isolation from cultural centers negatively affect the mental development of children, their intellectual development.

 Along with upbringing and social environment, hereditary inclinations also have a significant impact on the development of children. The correlation coefficient in the determination of intelligence increases from 0 (for unrelated persons who grew up separately) to 0.2 - 0.23 (unrelated, but brought up together), to 0.30 between parents and adopted children. For siblings (siblings) raised separately, this ratio rises to 0.40. For parent-child couples, same-sex and opposite-sex fraternal twins and siblings who grew up together, it will be around 0.50. For separately raised OB, it is mutilated to 0.75. For co-raised OB - from 0.75 to 0.95. The twin method can also be used to solve didactic questions. So, V.E. Gmurman, to compare the effectiveness of different teaching methods, selected several pairs of twins aged 5.4 to 6 years. One twin, a member of a couple, learned using the sound method, the other, his partner, using the whole word method. It was possible to compare and determine the relative effectiveness of literacy teaching methods in their pure form, excluding the influence of hereditary and environmental factors.

 The studies of twins conducted by V.A. Kalachev and V.V. Muravlev made it possible to identify different types of work ability of primary school students, to optimally combine the child's capabilities with the requirements of a specific school curriculum, and also to predict the success of children's education without prejudice to their health. These data are especially important when enrolling in gymnasium classes with increased requirements for students.

 **VERIFICATION –** verification of the truth of a theoretical proposition by experimental means.

**The GENEALOGICAL METHOD** is a method of studying the patterns of human inheritance based on the compilation of a genealogy. Suggested by F.Galton. It is applicable if there are known direct relatives on the maternal and paternal lines in a number of generations, as well as if there are known descendants of proband in several generations. It is widely used in typhlopedagogics, sign language pedagogics, and oligophrenopedagogics for the diagnosis of diseases with a hereditary nature. This information is of great importance for medical and genetic consultations in determining mental retardation, congenital or acquired deafness, blindness and other violations of individual characteristics. Depending on the diagnosis, different methods of education and upbringing are used. There is a complex relationship between pedagogical and special scientific knowledge obtained as a result of research. Special knowledge is often used as the basis for explaining the observed differences in the individual characteristics of schoolchildren, their psychophysiological reactions and states in the process of educational activity. They serve as a basis for justifying the norms and specific pedagogical recommendations to practice.

**DIDACTIC EXPERIMENT** – an experiment that is carried out in research related to the definition of a new content of education, the development of new teaching methods,as well as the identification of the effectiveness of pedagogical methods and techniques already implemented in practice that are part of the field of didactics.

**NATURAL EXPERIMENT -** an experiment, the purpose of which is to test the influence of a factor on certain aspects of the educational process in the conditions familiar to students. The work with the students is carried out either by the class teacher or by a teacher they know. See Pedagogical experiment.

**IDEOGRAPHIC METHOD -** a method of cognizing an object as a single unique whole. It is about the individuality of an object taken in its entirety, since the whole does not coincide with the sum of its parts. In pedagogical research, this method is rarely used, although in this area unique objects and experiences are frequent.

**STUDY OF DOCUMENTS** - a method of obtaining primary information at the early stages of research for a preliminary acquaintance with the object. Distinguish between traditional and formalized methods of studying documents. Traditional methods are based on the understanding of the document, the semiotic level of the researcher, on his general intuition and culture, and practical orientation. Traditional methods of analysis allow for a large share of subjectivity, which is the result of the results. Formalized methods are mainly concerned with developing a special technique called content analysis (or content analysis). See Content Analysis.

**LITERATURE STUDY** is one of the most widespread methods of obtaining primary information at the early stages of research for preliminary acquaintance with the object. Serves to analyze the history and current state of the problem, makes it possible to separate the known from the unknown, to study little developed and debatable positions, different points of view, to create a primary idea of ​​the problem and ways to solve it, to detect "blank spots" and ambiguities in the development of the issue.

The source of factual material for pedagogical research is the current documentation of schools and other institutions of public education: control and test work of students, essays, minutes of pedagogical councils, drawings and crafts of children, etc. The study of the results of students' activities allows us to judge the level of training or upbringing they have achieved, difficulties and their reasons, the tendency to change the nature and results of activities in the process of achieving the set goals.

**INDUCTION AND DEDUCTION** - methods of scientific knowledge, interconnected as analysis and synthesis. Induction in a broad sense is understood as a set of empirical techniques and methods of transition from the known to the unknown, generalization, analysis of facts based on practice, experiment, observation. This is a form of movement of cognition from the empirical to the theoretical level, a way of deriving hypothetical conclusions from well-known statements.

Deduction is understood as the process of deriving a statement from one or more other statements based on the laws and rules of logic, the transition from some given sentences - premises to their consequences. Induction and deduction must complement each other, elements of deduction must penetrate into induction, and deduction, in turn, must rely on the results of induction for the successful development of pedagogical research.

**INTERVIEW** is a method of obtaining information through direct, targeted conversations between the interviewer and the respondent. Depending on the purpose of the survey, a documentary interview is distinguished, when the survey of participants or witnesses is conducted in order to reproduce past facts; interview of opinions of relations, when with the help of interviews they try to establish the opinions and attitudes of people to current events or phenomena of social reality. By the form of questions: a formalized (standardized) interview, when the wording of questions, their number and alternatives of answers, coding and the form of recording are provided in advance and are strictly recorded; informal (not standardized), when questions and answers to them are not determined in advance. According to the procedure: panel, aimed at studying the evolution of attitudes and opinions of a group of people to a particular event within a certain period of time; group, when a small number of people are interviewed at the same time in order to provoke a discussion in the group; clinical, aimed at obtaining the most complete and profound information about the motives, attitudes, opinions of the respondent; multiple, when the same person is interviewed several times over a long period of time; focused, aimed at studying the reaction of a certain subject to some stimuli known to the teacher, the researcher of the situation; undirected, non-formalized interview, aimed at relieving the respondent's inner tension and achieving a psychotherapeutic effect.

**INTROSPECTION** is a method of studying the psyche through subjective observation by a person of his own sensations, feelings, thoughts, behavior.

**CLASSIFICATION OF METHODS** - division of research methods depending on the degree of generality and connection with theory and practice. General and specific scientific methods, empirical and theoretical, are highlighted. The most general is the dialectical method used in all sciences and at all stages of scientific work. General scientific methods also include observation, analysis, experiment, synthesis, etc. The use of the methods is limited to certain stages. Private scientific (special) methods are used only in one specific science or in the study of private phenomena. Empirical methods make it possible to directly cognize pedagogical reality, create the foundation for further theoretical development of the problem through observations, experiments, conversations, analysis of the results of the activities of students and teachers, questionnaires, study and generalization of pedagogical experience, etc.

 Theoretical methods make it possible to clarify, expand and systematize scientific facts, explain and predict phenomena, increase the reliability of the results obtained, move from abstract to concrete knowledge, establish relationships between various concepts and hypotheses, highlight essential and secondary ones among them.

With regard to the pedagogical research of M.A. Danilov classifies the entire set of methods into meaningful, formalized and methods of theoretical analysis and synthesis. Substantial methods require direct reference to facts that are obtained through observations, generalization of the experience of experiments. Formalized methods are more abstract. The main role in them is played by logical operations, on the basis of which new concepts and definitions are formed from old ones. The development of formalized methods depends primarily on the development of meaningful methods. The method of theoretical analysis and synthesis makes it possible to discover the nature of the studied phenomena, the structure, interconnection and dynamics of the development of the educational process (Problems of the methodology of pedagogy and research methods / Edited by M.A. Danilov and N.I.Boldyrev M .: Pedagogy. 1971. - 350 p.). To choose a method that is adequate to the research task, it is necessary to know the characteristics of the object under study, its specifics, characteristic features and conditions for the application of various methods. However, the effectiveness of scientific research depends not only on the method. It is also necessary to correctly formulate the problem, identify the contradictions that should be resolved, and creatively approach the solution of problems that arose in the process of research.

**CONTENT ANALYSIS** is a formalized method for analyzing the content of documents using mathematical tools. Includes several sequential actions: selection of units of analysis; search for their indicators in the text; calculation and statistical processing of the frequency of using a certain concept (provided that the selected indicators are taken into account or a proportion is established between different groups of indicators).

**LABORATORY EXPERIMENT** - See Laboratory experiment.

**LONGITUDE RESEARCH** - the study of the same object for a long time. It is used to study the development of social relations that develop in a group of students, in a classroom for several years, to study information requests of specialists as their qualifications grow, etc. In a longitudinal study, the change in one and the same object is considered primarily as a function of time. In pedagogical research, the object can be preserved only partially, and the changes can be interpreted as associated with changes in external conditions.

**SCENARIO METHOD** - a method for analyzing socio-economic and socio-pedagogical problems. Includes a clear timetable of details, the sequence and course of anticipated events, turning points and tipping points at which small influences can affect the final result of the process. Forces researchers to take into account details and processes, possible options for the development of a situation, which can be easily overlooked in ordinary consideration.

**RESEARCH METHOD** is an integral part of any research, the shortest path that determines the course and effectiveness of research, forms of work organization, the general methodological orientation of the author. In a philosophical sense, the method refers to scientific theories carried out by practice. Any such theory in the construction of other theories can essentially act as a function of a method in a given or even in other areas of knowledge. The method is also often viewed as a set of techniques for the practical or theoretical development of reality, subordinate to the solution of a specific problem in the field of education, a certain set of intellectual actions, logical procedures with which this science intends to establish the truth, check or refute it. Pedagogical science is formed by both the results of cognition of reality and the methods of obtaining this knowledge. It characterizes the potential capabilities of pedagogical science, the degree of its penetration into the study of real processes of teaching and upbringing, shows which phenomena can be cognized at the present time, and which are still the subject of hypothetical assumptions. As the complexity of scientific tasks increases, the dependence of the results of pedagogical science on the forms of organization of scientific activity, the degree of development of research tools, increases significantly.

**MODELING** is a theoretical method for studying processes and states using their real (physical) or ideal, primarily mathematical, models. A mental experiment can be considered a special type of modeling, when a person, on the basis of theoretical knowledge about the objective world and empirical data, creates ideal objects, correlates them in a certain dynamic model, mentally imitating movement and situations that could take place in real experimentation.Different models are used depending on the specific levels of pedagogical reality. There is a certain difference between modeling the study of pedagogical systems in statics and dynamics, a separate but representative object (monographic method) and a set of objects, panel or longitudinal research. See Longitudinal study.

**PEDAGOGICAL MONITORING -** long-term observation of the state of education and upbringing and management of these processes by timely informing the participants about the possible occurrence of unfavorable, critical or unacceptable situations.

 **OBSERVATION** is a purposeful and systematic process of collecting information through direct and immediate registration by the researcher of educational processes or phenomena. It allows you to obtain the data necessary for further theoretical constructions and their subsequent verification by experience, provides theoretical research with empirical information, checks the adequacy and truth of the theory in practice, allows you to study objects in their integrity, in natural functioning. Observation should lead to the formulation of hypotheses, their refinement, the transition to a theory that explains the phenomena. With its help, the obtained hypotheses, conclusions and final results of the entire research cycle are also verified. Observation differs from the usual fixation of phenomena in its systematic nature, purposefulness, and reliance on a certain pedagogical concept.

**SCIENTIFIC-PEDAGOGICAL EXPEDITION** is a method of pedagogical research that allows you to obtain information for a deep and comprehensive study of educational work with students on the ground in a mass school, in conditions that are as close to reality as possible. The expedition allows for a short period of time to collect a large and versatile material, to provide direct assistance to the teacher on the spot, to actively influence school practice in order to improve it. As a rule, specialists of different profiles participate in the expedition: scholars, didactists, methodologists, which makes it possible to comprehensively and holistically study the educational process.

**GENERALIZATION OF BEST PRACTICES** is a pedagogy-specific method of studying and analyzing the state of practice, identifying new trends arising in the creative search of teachers, the effectiveness and availability of science recommendations. The object of study can be mass experience (to identify leading trends), negative experience (to identify characteristic shortcomings and errors), advanced experience found in mass practice. M.N. Skatkin identifies two types of excellence: teaching excellence and innovation. Pedagogical excellence consists in the rational use of the recommendations of pedagogical science. Innovation contains its own findings, new content, new methods of teaching and upbringing.

 **PANEL STUDY -** the study of the same pedagogical object with a certain time interval according to the same methodology and program (for example, assessment of students' knowledge in different years). The same questions are posed to the same individuals at regular intervals so that the results can be compared and analyzed.

 **PEDAGOGICAL CONSILIUM** is a kind of expert assessment obtained on the basis of a collective discussion of the results of studying the upbringing of schoolchildren according to a specific program and according to common criteria. It allows you to identify the reasons for possible deviations in the formation of certain personality traits, as well as to obtain a collective opinion on the means of overcoming the identified shortcomings. See Expert judgment.

**SYNTHESIS** - the combination of separate parts to obtain a whole. See Analysis and Synthesis.

**SYSTEM ANALYSIS -** a complex method of cognizing an object (system) based on the allocation of individual related and interacting components of morphological structural - functional and genetic analysis, which allows to determine the composition of the elements of the system, its internal organization, the mechanism of interaction with the external environment, the origin of the system, the process of its formation and development .

 **SYSTEM APPROACH -** a method applied to the analysis of objects that have many interrelated elements, united by a common function and purpose, the unity of management and functioning. The systems approach is applied to those phenomena that are categorized as a system. The researcher must identify the components and system-forming connections of the pedagogical process or phenomenon, determine the main factors affecting the functioning of this system, assess the role and place of this system of holistic education in the system of other phenomena, identify individual elements or groups that will be affected by a transformative influence, study the processes management, ensuring the achievement of the set goals, to create a system with improved functioning, to implement the results obtained in practice. The variety of sides, elements, relationships, internal and external factors of the functioning and development of the educational process at school requires its systematic study.

**TEST BATTERY -** standardized sets of tasks used to measure and evaluate various achievements and personal characteristics of an individual or groups.

**FACTOGRAPHY -** description of factual material, observation results without their analysis and generalizing conclusions.

 **FORMING EXPERIMENT -** a kind of pedagogical experiments, which is not limited to the registration of the identified factors, but allows you to reveal the patterns of teaching and upbringing processes, to determine the possibilities of their optimization. The teacher-researcher is included in the experimental situation, actively acting as the initiator of the creation or improvement of certain pedagogical methods, means and approaches. He purposefully transforms the experimental pedagogical situation in accordance with the previously put forward scientific hypothesis to test its effectiveness. See Pedagogical experiment.

**SCALING -** a method of measurement, prescription of real processes of numerical values. Distinguish a scale of names, order, relations.

**HEURISTIC METHODS -** special methods and techniques of cognition used to solve creative problems in the process of discovering something new.

**LABORATORY EXPERIMENT -** an experiment that is carried out mainly in the form of experimental lessons for the typological characteristics of students, their memory, attention, and other characteristics. Due to its narrow focus, this type of experiment cannot be used to study complex processes characteristic of most pedagogical phenomena. See Pedagogical experiment.

**PEDAGOGICAL EXPERIMENT** - a general scientific method of cognition that allows you to gain new knowledge about the cause-and-effect relationships between pedagogical factors, conditions, processes through the systematic manipulation of one or more variables (factors) and registration of corresponding changes in the behavior of the studied object or system. The essence of the pedagogical experiment is characterized by the purposeful introduction of fundamentally important changes in the course of the pedagogical process in accordance with the task of the study and its hypothesis. The experiment is based on a comparison of the control and experimental groups, allows to determine the relationship of dependent and independent variables (methods and means of teaching and results in strictly fixed conditions). In pedagogical research, it is usually limited to the most important variables, it is assumed that the rest are not significant. Depending on the number of variables, traditional (with one variable) and factorial (many variables) plans for conducting experiments are distinguished, natural (field, laboratory) and mental (model), depending on the place and method of conducting the experiment. If the area under study is little known and there is no system of hypotheses, then one speaks of a pilot experiment. To check any dependencies in the educational process, a control experiment is used. Formative (teaching) experiment is of particular importance in pedagogy. The experiment must be carefully planned, based on a specific theory. See The Formative Experiment.

**EXPERTISE** - assessment, analysis, research by a specialist (expert) of any issues, the solution of which requires special knowledge and training in the relevant field.

**EXPERT EVALUATION** - expert judgment, expressed in quantitative or qualitative form (better, worse, more, less, etc.). Individual, group and collective expert assessments are possible. Individual scores can be obtained using rankings, scores, and paired scores. To obtain a generalized judgment of experts, check the consistency of ranking, use the Spearman rank correlation coefficient or the concordance coefficient.

 **EXPERT METHOD** is a complex of pedagogical and mathematical procedures aimed at obtaining information from specialists, analyzing and generalizing it in order to prepare and select rational decisions. The essence of the method consists in the experts' analysis of the problem with a qualitative or quantitative assessment of judgments and formal processing of the results of individual opinions. The most typical tasks solved using the expert assessment method are: analysis of complex pedagogical processes, characterized mainly by qualitative, non-formalized features; forecasting the development of the branch of knowledge, learning and education processes and their interaction with the external environment; assessment of alternative solutions and highlighting the most preferable options for the opranization of the educational process.

**Individual expert assessment is** used to study the personality of students, review educational and methodological literature, assess the quality of students' knowledge, etc. It includes a conversation between a researcher and an expert who answers pre-formulated questions or a questionnaire. The method of group expert assessments (collective expert assessment, the Delphi method) can be used in choosing the optimal structure of educational material, in lesson thematic planning, in the selection of didactic material for various types of classes, in assessing the quality of teaching, in the formation of generalized characteristics of student collectives, etc. See Peer Review Steps.

**ELECTROPHYSIOLOGICAL METHODS OF RESEARCH -** when solving specific issues in certain branches of pedagogy (defectology, industrial pedagogy, etc.), methods of physiology, genetics, biology, etc. are used. developmental delays, to study the functional state of the brain and its analyzers, the dynamics of the nervous processes of the individual-typological characteristics of students, the dynamics of the formation of motor skills, work skills, etc.

**EMPIRICAL METHODS -** research methods that make it possible to directly cognize pedagogical reality; the educational process in its development creates the foundation for further theoretical research through observations, conversations, experiments, etc.

**STAGES OF EXPERT EVALUATION -** the main procedures by which the expert method is implemented. Includes the definition of the purpose and objectives of the experiment, as well as the definition of the problem that needs to be solved; measures of responsibility and rights of the working group: determination of the timing of the experiment. The next stage is the selection of experts for the examination, determination of their competence. The most important stage of the expert assessment is conducting a survey of experts. It can be individual and group, personal or correspondence, oral or written. Expert teamwork methods: meetings, discussions, brainstorming, complex methods (business games and scenario). Individual expert assessments can be obtained through questionnaires, interviews, free conversation, interviews according to a given program, questionnaires with the participation of an interviewer. The last stage is the analysis and processing of the results obtained, the procedure for comparing objects to the selected indicators (attributes): determining the relationship between objects, the way they are compared. See Expert Method.

 **ETOGRAM -** descriptions of animal behavior using a certain system of conventional signs. The icon recording method allows biologists to describe relatively objectively the individual or collective behavior of animals in nature. This method, in our opinion, with appropriate modification, can be used to describe the behavior of students or teachers in various situations.

**1.4. Scientific activity**

**STATE SCIENTIFIC AND TECHNICAL POLICY -** the attitude of the state to scientific and scientific and technical activities, as a result of which the goals, direction, forms of activity and implementation of the achievements of science and technology are determined.

**HUMAN SCIENCES -** social sciences that study society, man and his culture (history, philology, pedagogy, sociology, philosophy, political science, etc.), in contrast to the natural and technical sciences, aimed at studying nature and technology.

**NATURAL SCIENCES -** sciences for the study of nature: matter (physics, chemistry, physical chemistry, etc.); life (biology, botany, zoology, etc.); human (anatomy, physiology, physiology of higher nervous activity, human genetics, etc.); earth, universe (astronomy, astrophysics, astrochemistry, etc.).

 **IDEOGRAPHIC SCIENCES -** sciences that describe individual phenomena (geography, history, etc.), mainly dealing with the explanation of single objects. See Nomothetic Sciences.

**PEDAGOGICAL RESEARCH -** application of the scientific method (in a broad sense) to solving problems in the field of education, training and upbringing. Research is understood as the process and result of scientific activity aimed at obtaining socially new knowledge about the laws of education and upbringing, the methods of teaching various academic disciplines, the organization of educational work, the theory and history of pedagogy. The most important characteristics of the study are systematic and empirical. Systematicity is a strict and clear sequence of conducting all stages of research, thanks to which scientists carry out a systematic approach. Consistency determines the correct course of work, gives the developer confidence in its positive result. Empiricality implies that the developer's assumptions about various aspects of the research and its results can be subjected to objective critical examination by others, not just the researcher himself. Scientific research is based on precisely established facts that allow their empirical verification, is purposeful, systematic, the interconnection of all procedures and methods is based on well-known theories, is built within the framework of logical-constructive schemes, the elements of which can be unambiguously interpreted and used in other scientific works.

**APPLIED RESEARCH -** a study aimed at solving individual theoretical and practical problems related to teaching methods, upbringing, educational content, school science, teacher training, and improving the pedagogical process. Applied research is designed to solve practical problems that take place in the so-called local situation, and is conducted according to a predetermined plan. The researcher does not set the task of solving questions that are not related to the planned topic. In most cases, applied research continues fundamental research, but it can also precede it, acting as an intermediate link directly linking fundamental research and development. See. The research is fundamental.

 **RESEARCH - DEVELOPMENT -** research that directly serves the practice, contains specific instructions on education and training, methods and forms of organizing various types of activities. Developments are viewed as a systematic use of scientific knowledge aimed at creating various useful materials, techniques and methods. They are designed to improve the effectiveness of teaching at school, while remaining a reliable link connecting science with practice. According to the American psychologist J. Bruner, developments are becoming the "engineering part" of what is, in fact, her training. These include programs, explanatory notes, textbooks, instructional and methodological recommendations. The developments continue applied research, actively influence the real teaching and educational process.

**THEORETICAL RESEARCH -** research aimed not at solving pedagogical problems by means of analysis and synthesis, abstraction and concretization, modeling and other theoretical methods. In the pedagogical literature, the terms "theoretical research" and "fundamental research" are often regarded as synonyms. In scientific terminology, another dichotomy is acquiring more and more importance: "theoretical-experimental", where the categories differ in method. If earlier this synonymy was not of great importance, now more and more applied theoretical research is being carried out. See Empirical research.

**RESEARCH FUNDAMENTAL -** a study that reveals stable patterns in the field of education and upbringing, which, in turn, is the basis for further search. It is aimed at expanding scientific knowledge, indicates the paths of scientific movement, creates a basis for applied research and development.

**EMPIRICAL RESEARCH -** research aimed at solving pedagogical problems using empirical methods (observation, conversation, study of documents, generalization of pedagogical experience, etc.).

**CLASSIFICATION OF RESEARCH -** from the point of view of organizational indicators: duration of implementation, complexity of implementation, level of planning of the experimental base and technical equipment. According to the duration of the study, there can be: short-term (up to 1 year); medium-term (1-3 years); long-term (over 3 years).By the complexity of the research carried out by one department; several divisions of one organization (different specialists); several organizations of one department; several organizations of different departments; in collaboration with institutions and institutions of other countries.According to the level of planning, work can be proactive or planned, carried out by order of an institute or department, private or public organization.According to the experimental base and technical equipment, the research is divided into: having their own experimental base, school or laboratory; provided with experimental equipment, technical means or means of processing research materials. In terms of content, research is divided into topics, problems, groups, directions, and fields of science. The main tool that allows you to classify works depending on their content are hierarchical or faceted classifications (rubricator and (or) thesaurus, LBC, UDC).From the point of view of focus on science and practice, work is divided into fundamental, applied research and development, intermediate options. To determine the type of work, it is necessary to use the facet classification developed by us.Depending on the method by which the problem is studied, research is divided into theoretical and (or) experimental. The leading method is determined based on the analysis of the methodology of a particular study from its context.From the point of view of accounting for organizational indicators: duration, complexity, level of planning, funding sources, staff, etc. grouping of studies depends on the agreement between the customer and the contractor and is determined on the basis of mutual agreement.

**Classifier of pedagogical specialties**

|  |  |
| --- | --- |
| 13.00.01 | General pedagogy, history of pedagogy and education |
| 13.00.02 | Theory and methodology of teaching and upbringing (by areas and levels of education) |
| 13.00.03 | Correctional pedagogy (surdopedagogy and typhlopedagogy, oligrofrenopedagogy and speech therapy) |
| 13.00.04 | Theory and methodology of physical education, sports training, health-improving and adaptive physical culture |
| 13.00.05 | Theory, methodology and organization of social and cultural activities |
| 13.00.07 | Theory and methodology of preschool education |
| 13.00.08 | Theory and methodology of vocational education |

**SCIENCE** is a sphere of human activity aimed at obtaining and theoretically generalizing the objective laws of nature and society, describing, explaining and predicting the processes and phenomena of reality on the basis of discovered laws, obtaining new knowledge that forms the scientific picture of the world.

**SCIENTIFIC (RESEARCH) ACTIVITY -** activities aimed at obtaining new knowledge and their application for solving scientific and practical problems.

 **SCIENTIFIC LABOR ORGANIZATION (SLO) -** improving the organization of scientific work based on the achievements of science and technology: psychology, physiology, human hygiene, management theory.

**SCIENTIFIC COMMUNITY -** a group of researchers working in one subject or problem area, connected with each other by a system of scientific communications. A group of scientists who are in direct and informal scientific contacts about the developed problem and exchange information on the results of research, was called the "invisible college".

**SCIENTIFIC REVOLUTIONS** are a type of innovation that radically rebuilds the foundations of scientific concepts of traditions in this area of ​​knowledge, are associated with a change in fundamental theoretical concepts, the introduction of fundamentally new research methods, and the discovery of new worlds. Scientific revolutions affect the worldview and methodological foundations of science, the style of thinking and, in their importance, go far beyond the specific area in which they occurred.

**SCIENTIFIC AND TECHNICAL ACTIVITY -** activities aimed at obtaining, applying new knowledge to solve various kinds of problems, the functioning of science, technology, production.

**SCIENTIFIC AND (OR) SCIENTIFIC AND TECHNICAL PRODUCTS** scientific and (or) scientific and technical result intended for implementation.

**SCIENTIFIC AND (OR) SCIENTIFIC AND TECHNICAL RESULT -** a product of scientific and (or) scientific and technical activity, containing new knowledge or solutions and recorded on any information medium.

**NOMENCLATURE OF SPECIALTIES OF SCIENTIFIC WORKERS -** the list of specialties of scientific workers for which the academic degrees of candidate and doctor of science are awarded jointly with the State Committee of the Russian Federation for Higher Education, the Higher Attestation Committee of the Russian Federation, the Academy of Sciences of the Russian Federation and other interested ministries and departments.

**NOMOTHETIC SCIENCES -** sciences, the main task of which is the establishment of laws based on scientific theories, and not only the explanation of facts. These include: physics, chemistry, biology, sociology, etc. See Ideographic Sciences.

**PARADIGM (from the Greek prototype, sample, example) -** a conceptual scheme, theoretical and methodological provisions adopted at this stage of the development of science as a model for the standard of scientific research, collection and processing of materials, assessment of the systematization of the data obtained, interpretation of the results of scientific research. The concept introduced into the theory of science by T. Kuhn, applied to the history of natural sciences and means that: 1) any scientific research is guided by some general basic concept of the nature of its subject, which determines both the posing of the question and the possible answers to it, and which then, in the course of research, is "filled", i.e. filled with specific content; 2) due to the detection of deviations ("anomalies") from the prevailing concepts, science is forced to change this basic concept (paradigm), which entails the restructuring of all previously accumulated knowledge of a given area; 3) the history of science is not a linear process of accumulation (accumulation) of knowledge, but passes through "scientific revolutions", in the process of which some basic system-forming ideas ("paradigms") are replaced by others. The idea of ​​a paradigm is inextricably linked with the idea of ​​the scientific community, within which this paradigm is known. Currently, the term "paradigm" is used in the meaning of coordinated shifts in the history of culture in general, complexes of ideas that underlie various lifestyles, at the basis of various sciences and scientific schools, including pedagogy and psychology.

**DEVELOPMENT -** research that directly serves the practice, contains specific instructions on education and training, methods and forms of organizing various types of activities. These include programs, explanatory notes, textbooks, instructional and methodological recommendations. The development continues applied research, connects with practice, actively influences the educational process.

**SYSTEM OF SCIENCES -** the conventional division of science, depending on the object of study, into natural, social, humanitarian and technical.

 **TECHNICAL SCIENCES -** sciences aimed at studying the results of human activity, created to implement the processes of production and service the non-production needs of the circumstances of society.

**EXPERIMENTAL DEVELOPMENTS IN THE FIELD OF EDUCATION -** an activity based on knowledge acquired as a result of scientific research or practical experience, and aimed at obtaining and further improving the educational process.

**FACET RESEARCH CLASSIFICATION -** division of objects into independent classification groups that characterize different aspects of research. Each of the facets includes many terms (focuses) that are inherent in this facet and reflect the diverse features of scientific works in the field of education. Four facets are identified that reveal the properties of research from the point of view of their theoretical and practical significance.The first facet **-** research objectives - characterizes the work in terms of the results of the planned goals that researchers set themselves, for example, description, identification, justification, development, development; systematization, analysis of concepts, methods, recommendations, etc.The second facet **-** research results - denotes the product obtained as a result of scientific activity: concepts, principles, patterns, hypotheses, classifications, methods, rules, recommendations, trends, etc.The third facet **-** the address of the study - defines the circle of individuals and organizations interested in using the results obtained. These are researchers, teachers, leaders and organizers of public education and pedagogical science and other persons.The fourth facetcharacterizes the type of publication in which the results of scientific research are recorded: scientific report, dissertation, article, monograph, textbook, guidelines, program, etc.The faceted method greatly facilitates the multi-faceted reflection of the document, since it is possible to build classes from various combinations of features. To determine the facets and the terms that form them, it is necessary to analyze the research performed, write out and organize them according to objectives, results, addresses and types of publications (Table 2).

**Classification signs for different types of studies in didactics**

|  |  |  |  |
| --- | --- | --- | --- |
| Research task | Research result | Research object | Edition type |
| Analysis | Аlgorithm | Preschool teachers | Abstract |
| Implementation | Hypothesis  | Primary school teachers | Analytical overview |
| Revealing | Regularity | High school teachers | Bibliography |
| Hypothesis | Idea | Teachers of vocational schools | Brochure |
| Addition | Classification | Teachers of secondary specialized institutions | Thesis |
| Studying | Concept | Lecturers | Report |
| Research | Criterion | Scientific staff | Instructive and methodological material |
| Usage | Method | Leaders and organizers of public education and science | Book  |
| Concretization | Мodel | Out-of-school workers | Monograph |
| Generalization | Direction |  | Scientific report |
| Justification | Concept |  | Program |
| Discussion | The rule |  | Collection of tasks |
| Description | Sentence |  |  |
| Definition | Reception |  | Article |
| Rebuttal | Principle |  | Abstracts |
| Assessment | Problem |  | Textbook |
| Preparation | Recommendation |  | Encyclopedia |
| the confirmation | Didactic system |  |  |
| Staging | Methodical system |  |  |
| Building | Means |  |  |
| Check | Standard |  |  |
| Development | Theory |  |  |
| Development of | Trend |  |  |
| Consideration | Terminology |  |  |
| Systematization | Condition |  |  |
| Improvement | School equipment |  |  |
| Creature |  |  |  |
| Clarification |  |  |  |
| The wording |  |  |  |
| Characteristic |  |  |  |

**FUNDAMENTAL RESEARCH -** research aimed at studying the laws of the pedagogical process, the general theoretical concept of science, its methodology, history. It is aimed at expanding scientific knowledge, indicates the ways of scientific research, creates a basis for applied research and development.

**1.5. Research results**

**ALGORITHM** (from Lat. Algorithmi) - a clearly defined sequence of performing certain actions, transformations, calculations on a single object or their combination. It is widely used when teaching spelling rules, when performing arithmetic operations, etc.

 **PROBABILITY** - a numerical characteristic of the possibility of a certain event occurring under certain conditions. For example, the concept of "Complete Assimilation" assumes 95% assimilation of knowledge by all students.

  **HYPOTHESIS** - an assumption put forward as a preliminary conditional explanation of a certain phenomenon (or a group of phenomena), the existence of an object (its properties and connections, causes of occurrence) necessary to solve a specific problem. A hypothesis is vague, probable knowledge not yet proven logically and not confirmed by experience to be considered valid knowledge.

 **CAUSAL HYPOTHESIS** - a hypothesis that reflects cause-and-effect relationships and has the following standard form: H (aRb), where H is the mode of hypotheticalness, a and b are variables, R is the type of relationship, relationships between variables (correlation, functional, variable). Such hypotheses take place in the so-called behavioral sciences and are tested in experiments. From a general view, the named types are considered as species manifestations of probabilistic causality. General theoretical (nomological) hypotheses in the above complex of sciences take the form of probabilistic causal statements, verified by experiment. In turn, this requires the operationalization of variables and the transformation of nomological hypotheses into statistical ones.

 **DEFINITION**-see. DEFINITION.

 **DOCTRINE** - teaching, guiding idea, system, guiding principle See NATIONAL EDUCATION DOCTRINE.

 **LIFE CONCEPT** - a concept that is formed in children when they master the meaning of words outside of teaching.

 **The LAW** is an expression of universal, essential, often repeated connections, objects and phenomena of pedagogical reality, recognized as mandatory.

  **REGULARITY** is an expression of the connection and interdependence of pedagogical phenomena.

  **IDEA** - the main, leading idea, initial knowledge, a concept for systematizing knowledge, a reflection of the essence, which includes both knowledge about a pedagogical object and the definition of ways to transform it.

 **CLASSIFICATION** - orderly division of a certain set of objects into groupings based on the use of an established system of division signs and a set of certain rules.

 **CONCEPT -** a system of views, principles in any area; general concept, basic idea of ​​work, work.

 **CRITERION -** a measure of assessment, a feature, a rule on the basis of which a choice is made after measurement, an assessment of scientific and practical activities.

 **METHOD -** methods of cognition of pedagogical phenomena, processes and patterns and their practical implementation.

 **MODEL** is a system of objects or signs that reproduces some essential properties of the original system. In the process of scientific cognition, the model replaces the original: studying the model provides information about the original. The presence of a partial similarity relation (homomorphism) allows the model to be used as a substitute or representative of the system under study.

 **Models** can be material objects or mathematical, informational (visual-figurative, logical-symbolic)

 **Model** is a means of cognition based on analogy. But analogy is not identity. The model reproduces the structure of the original, simplifies it, and distracts from the irrelevant. It serves as a generalized reflection of a phenomenon, it is not identical to it, it is the result of an abstract generalization of practical experience, and not a direct result of an experiment.

 **DIRECTION -** the path of development, social, scientific movement, grouping, scientific school; a group of works united by a single goal, a common worldview, a research method. In pedagogy, there are various directions, united by goals, research methods. So, on the basis of the integrity of the idea: anti-pedagogy, humanistic, pedagogy, pedagogical anthropology, pragmatic, rationalistic, phenomenological, etc. According to research methods: comparative, experimental, etc.

 **GENERALIZATION** - a mental transition to a higher level of abstraction by identifying common features (properties, relationships, development trends, etc.) of objects in the area under consideration; from concepts that have a smaller volume to concepts that have a larger volume. On the basis of generalization, new scientific concepts, laws, and theories can be derived. Analytical explanations are carried out without direct reference to experience, on the basis of understanding linguistic expressions and applying the rules of deduction to them. Synthetic explanations (inductive explanations and explanations of theories of an experimental nature) presuppose an appeal to the analysis of experimental activity. Inductive explanations generally lead to judgments of an experimental nature, for the justification of the truth of which additional verification is necessary.

 **EXPLANATION -** disclosing the essence of a scientific object; identification of deductive relationships between abstract objects, due to which there is one or another knowledge about the subject under study; carried out by virtue of a certain law to which this object is subject.

 **EXPLANATION OF PHENOMENA -** establishing links between various individual phenomena and several general facts (laws).

 **DESCRIPTION -** one of the functions of scientific research, which consists in recording the results of experience, observation or experiment using the terms of natural or formal language. It can be empirical (when describing empirical objects) or theoretical (descriptive) when describing abstract objects.

 **DEFINITION (definition) -** establishing the meaning of a newly introduced symbol, term, object or clarifying them using familiar words (nominal), by including familiar words in the context (contextual) or explicitly formulating equality (explicit or normal definition).

 **CONFIRMATION -** one of the criteria for the truth of a theory or law, the correspondence of the put forward assumption, hypothesis to a fact or experimental result.

 **APPROACH -** a set of techniques, methods in the study of any pedagogical problem.

 **INDICATOR -** a phenomenon or event by which one can judge the course of a process.

 **AMENDMENT -** addition or change of something.

**POSTULATE -** an initial statement, an assumption taken within the framework of a certain scientific theory as the true position.

 **PARCEL -** a statement, a statement, on the basis of which a conclusion is made, an inference. Premises are a necessary condition for argumentation and proof.

 **RULE -** a position that reflects a pattern in pedagogical phenomena or processes and prescribes a certain order of activity.

 **PROPOSAL -** pedagogical knowledge presented for discussion as a known opportunity for its application in practice.

 **RECEPTION -** a mode of action that implements a method to achieve a goal in the process of teaching and upbringing.

 **PRINCIPLE -** the basic, starting position of the pedagogical theory, the concept, which determines the content, organizational forms and methods of educational and educational work.

 **PEDAGOGICAL PRINCIPLES -** bases of a normative nature, or general instructions for activities, which apply to all phenomena in a given field of education.

 **PROBLEM (**from the Greek. problema- difficulty, task, task) - a practical or theoretical issue that requires its resolution; uncertainty or contradiction arising in the process of cognition, the subject's awareness of the impossibility of resolving difficulties and contradictions arising in a given situation by means of available knowledge and experience ... A transitional form in the development of knowledge from empirical to theoretical, arising from facts that conflict with objective reality. As a result, a situation arises when empirical knowledge cannot develop without theory. Only theory explains the facts and gives a holistic view of the subject. To solve a problem is to give the facts a theoretical interpretation. For its solution, the problem must be transformed into creative cognitive tasks that allow testing the model of certain conscious or intuitive decisions. The problem, like the task, originates in a problem situation. The central element of the pedagogical problem is the contradiction between knowledge about the needs of people in the field of learning and education and ignorance of ways, means and methods of their solution. The solution to the problem is not contained in the known knowledge and cannot be obtained by transforming the available information. When posing a research problem, it is necessary to take into account that pedagogy is focused primarily on the need to overcome the shortcomings of pedagogical practice. Problems in the field of education are described in the form of a system of interrelated problems, the solution of which answers the unresolved questions posed.

 **PROJECT -** a set of specific actions, documents, preliminary texts, an idea for creating a real object, subject or various kinds of theoretical product.

 **PROCEDURE -** establishing an order of action when carrying out certain operations or scientific and practical activities.

 **PROCESS -** a consistent change of any object, state or phenomenon of the material world, in which certain objective laws are expressed; sequence of actions to achieve any result.

 **RECOMMENDATION -** pedagogical knowledge intended for use in pedagogical practice.

 **PROPERTY -** a characteristic inherent in things and phenomena, allowing them to be distinguished or identified. An abstract feature, a mental characteristic of an empirical object, an external manifestation of its quality. It expresses the attitude of a given thing to other things with which it interacts.

 **SYSTEM -** a set of elements that are in relationships and connections with each other, forming a whole and performing a single function. There are material (inorganic and living) and abstract systems (concepts, hypotheses, theories).

 **MEANS -** a) mode of action; b) a set of adaptations to achieve a pedagogical goal.

**TENDENCY** - (from Lat. Tendentia- orientation) - the direction of the development of any idea, pedagogical theory and practice.

 **THEORETICAL KNOWLEDGE** - knowledge aimed at explaining objective reality, describing, systematizing and explaining a set of data of the empirical level, ideal objects, knowledge about the essence, i.e. relationship that forms the basis of individual relationships. As a result, the theory describes the properties of ideal objects, their relationships, as well as the properties of structures formed from primary ideal objects; is able to describe all the variety of data that a scientist encounters at the empirical level.

 Theoretical knowledge is divided into fundamental theories and theories that describe a specific, fairly large area of ​​reality based on fundamental theories. In fundamental theories, we deal with the most abstract pedagogical objects, and in theories of the second generation, with certain derivatives of these ideal objects, on the basis of which a model of concrete phenomena of reality is constructed. In theory, ideal objects are controlled, the object can be described in detail, and consequences from the theoretical view are obtained. See PERFECT OBJECTS, EMPIRICAL KNOWLEDGE.

 **THEORY** - description, explanation and prediction, a system of basic ideas in any area of ​​knowledge, united by a general principle of scientific provisions, a holistic representation of patterns and essential properties, arising on the basis of widely supported hypotheses.

 **TERM** - a word or combination of words denoting a concept used in science, technology, art, etc.

 **TERMINOLOGY** - a collection, a system of words or phrases that are the exact name of a strictly defined concept.

 **INTERPRETATION** - a procedure for revealing the hidden meaning of speech, dreams, various symptoms and symbols.

 **REQUIREMENT** - a pedagogical rule, a condition that must be met.

 **FACT** is an objective and irrefutable event, a unit of empirical knowledge about a phenomenon, a separate relationship that exists in pedagogical reality (practice), taken out of connection with others.

 **CHARACTERISTIC** - a distinctive feature (or signs) of objects, systems, phenomena or their combination.

 **EMPIRICAL KNOWLEDGE** - knowledge about a separate phenomenon or separate relationships, taken out of connection with others. Empirical (fact-fixing) knowledge provides only a description of phenomena that does not reveal their essence. The unit of empirical knowledge is fact. See THEORETICAL KNOWLEDGE.

**1.6. Criteria for assessing the quality of research**

**RELEVANCE OF RESEARCH -** a criterion for assessing the quality of scientific research, characterizing the degree of discrepancy between the demand for scientific ideas and practical recommendations (to meet a particular need) and the proposals that science and practice can give at present. The criterion of relevance indicates the need and timeliness of study and solving the problem for the further development of the theory and practice of education and upbringing, characterizes the contradictions that arise between social needs and the available means of their satisfaction. The criterion of relevance is dynamic, depends on time, specific conditions and specific circumstances. A topic that is relevant today may lose its sharpness tomorrow; an issue that is important for working in a rural school will be of secondary importance in a city; problems of concern to a novice teacher are not always significant for an experienced, qualified teacher. Actual research is closely related to the level of development of public education, the country's economy, its scientific potential, tasks that are posed and solved at a given historical moment. See CRITERIA FOR ASSESSING THE RELEVANCE OF RESEARCH.

 **QUALITY OF SCIENTIFIC-PEDAGOGICAL RESEARCH -** the essence of the use value of a product of science, it characterizes a complex of indicators important from the point of view of different categories of users that determine its socially useful properties. The quality of pedagogical research is determined by the novelty, relevance, theoretical and practical significance of information in it for all interested parties taking into account their qualifications and working conditions. The performed pedagogical research has only a potential use value. The transformation of a potential use value into a real one occurs in the process of using a scientific product as a result of its introduction into practice.

 **CRITERIA FOR ASSESSING THE RELEVANCE OF RESEARCH -** a list of features on the basis of which the relevance of the planned or obtained results of scientific and pedagogical research is assessed.

**Basic research**

**Highly relevant research**

There is an acutely expressed need to develop a problem.

 Solving a problem can positively affect many aspects of practice. The topic in science is not developed or is very poorly developed. There are only a few publications on this issue. Development of the theory of the issue can significantly change our ideas on the fundamental issues of pedagogy, open up new areas of applied research.

Current research

The practical need for solving the problem is sufficiently expressed. The solution of the problem will have a positive effect on different aspects of practice. The topic in science is poorly developed. There are many conflicting approaches. Development of the topic can supplement our ideas on a number of theoretical issues. Prospects for applied research are open.

**Studies of little relevance**

The practical need for the development of the topic is insignificant. In general, the problem has been studied satisfactorily, although individual issues have not been resolved. The topic has been sufficiently developed, a large number of works have been published that reveal this issue, the problem. Development of the topic can concretize some theoretical issues of interest to a small circle of people.

**Outdated research**

Currently, research of this kind is not necessary. For practice, this problem is insignificant. There are many applied works that satisfactorily solve this problem. Studying the topic, the problem will not change anything in theory. The data obtained will duplicate existing concepts without any clarifications and additions. ...

**Applied research and development**

 To determine the relevance of applied research and development, the main importance is the practical need for them and the degree of dissatisfaction with the existing situation in practice: is the educational process provided with appropriate textbooks, manuals, methodologies? How well do they solve the assigned tasks? The following gradation of works is proposed.

**Highly relevant development**

 The need for development is very great. There are no textbooks, teaching aids on this topic or area of ​​educational work. This technique is needed by teachers, students and others.

**Actual development**

The need for development is great. Existing textbooks, programs, manuals unsatisfactorily solve the problem, do not provide the required level of training, education of students. This development is needed by teachers and students.

**Low-current development**

 The need for development is small. In practice, this problem has been solved satisfactorily. Certain particular issues need to be improved.

**Outdated development**

The issue has been resolved positively. Existing textbooks, programs, manuals provide the required level of training or education. The development of new techniques is currently not rational.

 **CRITERIA FOR EVALUATING THE QUALITY OF RESEARCH** - general scientific, standard and specific scientific criteria, which are used to evaluate the results of various types of pedagogical research.

**General scientific criteria** contain requirements for the quality of the results of completed works, regardless of the field of science and specific issues: this is primarily novelty, theoretical and practical significance, and relevance. These requirements are formulated in regulatory documents.

**The standard criteria** are built taking into account the specifics of fundamental and applied research and development, and reflect the most characteristic features of various types of pedagogical research. The model criteria continue the general scientific criteria applied to different types of research.

**Specific scientific criteria,** in turn, reflect the standard requirements for the quality of scientific research, depending on the direction of pedagogical science and specific issues in the field of education.

The algorithm for converting general scientific requirements into specific scientific ones includes the definition of the scope of the criterion, the selection of results specific to this area, the formulation of general scientific requirements in terms of the analysed area, reflecting its specifics. So, novelty is a general scientific criterion. It reflects the new knowledge that is obtained as a result of the research, but it changes significantly depending on the type of research. In basic research, these will be new scientific concepts and patterns; in applied research, they will be methodological principles.; in the development - specific regulations, rules, algorithms. The criterion of novelty is transformed in different ways in different areas of pedagogy. In methodology, these are new directions of development of pedagogical science, its trends; in didactics, methods and forms of teaching; in the economy of public education, planning methods, etc., Other criteria are transformed in a similar way. The quality assessment criteria must meet the following requirements: adequacy, semantic unambiguity, constructiveness, necessity and sufficiency.

**CRITERIA FOR EVALUATING THE NOVELTY OF RESEARCH** - a list of features on the basis of which the novelty of the results of scientific and pedagogical research is evaluated. The main features that characterize the novelty of scientific and pedagogical research are listed below. See THE NOVELTY LEVELS.

First rank. The results of the study repeat the theoretical and practical provisions and recommendations known in science and practice without any clarifications and additions (there is no novelty).

Second rank. The results of the research clarify and concretize the existing provisions in science and practice concerning the content, principles and methods of teaching, education, organization of various types of activities, etc. (the level of concretization).

Third rank. The results of the research supplement, introduce new elements into the known theoretical and practical provisions concerning the content, principles and methods of teaching, education, organization of various types of activities, etc. (level of addition).

Fourth rank. The results of the research introduce fundamentally new knowledge concerning the content, principles and methods of teaching, education, organization of various types of activities, etc. (the level of transformation).

**CRITERIA FOR ASSESSING THE PRACTICAL SIGNIFICANCE OF RESEARCH** - a list of features on the basis of which the practical significance of the results of scientific and pedagogical research is evaluated. The main features and indicators that characterize the practical significance of the research results for didactics, the theory of education, and private methods are listed below.

**Number of users interested in research results:**

Individuals (teachers, students, researchers) who are interested in this problem.

Individual groups (teachers, students, researchers, managers and organizers of public education, etc.). The entire group of persons in this category, regardless of their length of service and working conditions.

Many practitioners of different groups and fields.

**The level of significance of research results:**

It is important for solving specific issues within a narrow area.

It is important for solving a group of interrelated issues of education and upbringing.

It is important for solving general methodological issues.

It is important for solving general pedagogical issues.

**Scale of implementation of the research results:**

They can be implemented in one or more schools.

Can be implemented in the district, region.

They can be implemented on a national scale.

They can be implemented nationwide.

**Economic and social efficiency:**

Close to or below existing standards.

Slightly higher than the existing ones.

Noticeably higher than the existing ones.

Very high.

**Readiness for implementation:**

General didactic and methodological proposals have been developed.

Normative materials defining the activity of teachers have been developed.

Normative materials and regulations for teachers have been developed.

All the necessary regulatory materials for teachers and other practitioners have been developed. See THE PRACTICAL SIGNIFICANCE OF THE RESEARCH RESULTS.

**CRITERIA FOR EVALUATING THE THEORETICAL SIGNIFICANCE OF RESEARCH** - a list of features on the basis of which the theoretical significance of the results of scientific and pedagogical research is evaluated.

**The theoretical significance is very high** (n-novelty; c-conceptuality and evidence-based; p-perspective). n4. The results of the research substantiate fundamentally new concepts and patterns in the field of didactics; they radically change our ideas concerning the content of education, the principles and methods of teaching, and the patterns of the educational process. c4. A holistic theory of the content of education, methods, and principles of didactics is developed and justified. On the basis of the concept, didactic and methodological proposals are formulated; the conclusions are theoretically and experimentally confirmed. p4. A new direction is being opened in the development of applied didactic research and related disciplines.

**The theoretical significance is high** n3.The results of the research develop, supplement, and introduce new elements into the content of education, methods and forms of teaching, patterns, and principles. The theory of the content of education, methods, and principles of didactics is developed and justified; the conclusions are confirmed. p3. Prospects for applied didactic research are opening up.

**The theoretical significance is satisfactory** n2. The results of the study clarify and concretize certain provisions concerning the content of education, methods, principles, forms of education and other issues of didactics; the conclusions are partially confirmed. c2. Separate theoretical propositions concerning various aspects of the content of education, teaching methods, and principles are put forward. The conclusions are partially confirmed. p2. There are prospects for solving particular problems within this field of didactics.

**Theoretical significance unsatisfactory** n1. The results of the study repeat the known theoretical concepts, ideas, hypotheses, approaches in the field of educational content, principles, laws, teaching methods without any clarifications and additions. c1. The scientific concept or individual theoretical propositions are not formulated; they are given without any justification and contradict the known facts. p1.There are no prospects for further work.

**METHODS FOR DETERMINING RELEVANCE** - various procedures that determine the need and possibility of solving a problem in the present or near future.

The expert method includes the following procedures: applications of authors of works are submitted with the justification of the need for research. The application specifies the name of the topic, its goals and objectives, and formulates in the first approximation the main theoretical and practical conclusions that are expected to be obtained. A mandatory element of the justification should be a brief analysis of publications that would address similar issues, previously carried out on this topic of research. Experts study the authors ' applications and select promising topics for further analysis. At the same time, they take into account the degree of familiarity of developers with the literature available on this topic, how clearly the author represents the final result, and how this result will differ from the already known data.

To determine the relevance of the topic of fundamental research, experts decide how much this topic is developed in science and how great is the need for its implementation at the present time. There are two facets: the degree of development of the topic in science; the degree of theoretical significance of the topic. The forecast here is less reliable than for applied work.

To determine the relevance of applied research and development, first of all, the practical need for the development of the topic, the degree of interest of teachers and students in normative materials, the presence or absence of similar developments, the expected social or economic effect of the implementation of the results in practice, the degree of solving this issue in science are taken into account. Depending on the type of research and the field of pedagogy, a basic version is compiled, in which the signs of relevant topics are recorded, then by comparing the generalized expert assessment of a particular work with the basic version, the degree of relevance of this study is determined.

**METHODS FOR DETERMINING NOVELTY** - various procedures by which the novelty of research results is determined. The novelty of the research results can be assessed using the anticipation method, the reference comparison method, and the information method.

The method of **anticipation** is to determine the novelty of the results that can be obtained as a result of research using a preliminary assessment of experts. The anticipation method is used for a preliminary assessment of the novelty of the work. The essence of the method is that the results of the analyzed work are formulated in the form of questions that are asked to experts. Experts answer the questions asked, as if anticipating the conclusions of the study. If the experts ' answers and the evaluated conclusions coincide, the results are considered known.

Another option: experts are asked questions in the form of tasks that the researcher set for himself. Depending on their answers, as in the previous cases, the novelty of the study is determined.

**Information method**-includes the search for a document (dissertation, scientific report, article, etc.), in which the most likely conclusions can be obtained similar to the desired work. Only the name of the document and the main tasks set in the work are recorded. The method of determining the novelty is reduced to the search for a relevant document, the content of which is most consistent with the analyzed source. This is achieved by using the rubricator and the descriptor dictionary.

**The method of reference determination**-includes: drawing up a standard; analysis and classification of the results obtained; comparison of the basic version and the results of the analyzed work. The standard (basic version) is taken as the theoretical and practical knowledge known at the given time -in the field of public education and pedagogy, selected and described according to a certain scheme. Drawing up the basic version involves analyzing the literature on the desired problem, classifying knowledge by type and describing it using the appropriate characteristics. Thus, we will get a list of the main results (concepts, methods, ideas, recommendations, etc.) on the desired problem, which will serve as a reference. This standard is relative and is valid for a certain time. At the stage of analysis and classification, experts analyze the results of the evaluated work and classify it by type of knowledge, content and level of novelty. At the final stage, the comparison of the basic version (standard) and the results of the analyzed work is carried out. Depending on the degree of coincidence or discrepancy between the basic version and the results obtained, the results of the analyzed work are evaluated as known or new. The reference comparison method is especially effective if you use modern information collection technology, create problem-oriented databases on various issues of public education and pedagogical science. The presence of such a database opens up fundamentally new opportunities for an objective assessment of research results, allows you to compare the novelty of known (previously performed) and new research works.

**METHODS FOR DETERMINING PRACTICAL SIGNIFICANCE** - procedures that assess the practical significance of scientific and pedagogical research. The practical significance is determined by the expert method. The number of experts must necessarily include practitioners to whom the recommendations are addressed. The examination of the works is carried out in two stages. At the first stage, the authors of the research answer the questionnaire questions that characterize the practical significance of the research results:

What practical conclusions, suggestions and recommendations were obtained in the work? What is the difference between the author's suggestions and the recommendations already available in this regard? What categories of practitioners are interested in using and implementing the results obtained in their practical activities? What is the scope of the results obtained? What is the possible scale of implementation of the research results? What is the degree of readiness of the research results for implementation? What are the possible social and economic consequences (social and economic efficiency) of putting the results into practice?

At the second stage, experts analyze the authors ' answers to the questionnaire questions and determine their reliability for each item. The general conclusion about the practical significance of the results of applied scientific and pedagogical research is made on the basis of comparing the obtained faceted formula with the basic version.

Practical significance is very high: A4B4B4G4D4

Practical significance is high: AZVZVZGZDZ.

Practical significance is low: A2B2B2G2D2.

The practical significance is satisfactory: A1B1B1G1D1, where A -the main categories of users and their number; B - the levels of significance; C-economic and social efficiency; D-the scale and volume of implementation; E-readiness for implementation. The numbers 1,2,3,4 characterize the rank of the study in order of increasing the degree of a particular quality.

**METHODS FOR DETERMINING THE THEORETICAL SIGNIFICANCE** - procedures by which the theoretical significance of scientific and pedagogical research is evaluated. The theoretical significance of the work is determined by the expert method and depends on the possible combinations of features. Experts analyze a specific work and select an alternative in each of the facets that corresponds to this work. For example, the formula n3c4p3 means that the novelty of the work is evaluated by the rank of n3, by the conceptuality and evidence of c4, and by the prospects of p3. Previously, experts prepare a basic version for this field, which is used for comparison and reflects the level of theoretical significance of this class of work. The following are possible formulas that characterize various variants of the theoretical significance of the research: **very high**: n4c4p4; n3c4p4; **high**: n3c4p3; nZzKpZ; n4c3p3; **satisfactory**: n2c2p2; n2c3p2; n2c2p3; **low**: n1c1p1; n1c2p1; n1c1p2.

The assessment of the theoretical significance of each specific work consists of two stages: at the first stage, experts determine the formula of the work, and at the second stage, they compare this formula with the basic version. The individual estimates obtained in this way are consistent to obtain a generalized judgment. See CRITERIA FOR EVALUATING THEORETICAL SIGNIFICANCE.

**NOVELTY** is a criterion for the quality of information (the results of scientific research). Reflects new socially significant knowledge, facts, data obtained as a result of research or practical activity. The novelty criterion reflects the content side of the result. Depending on the result, the theoretical novelty (concept, principle, etc.) or the practical novelty (rule, recommendation, methodology, requirement, tool, etc.), or both types can be brought to the fore. New knowledge in comparison with the data already known in science can perform various functions -to clarify, concretize the known, supplement it or radically transform it. This side of novelty is characterized by levels of novelty. See NOVELTY LEVELS.

**THE MAIN COMPONENTS THAT CHARACTERIZE THE TOPIC AND THE RESEARCH RESULT** are interrelated characteristics that can be used to describe the topic and the results of the research. From our point of view, any topic and result can be represented in the form of three interrelated components: object, transformative and concretizing.

**The object component** characterizes the research product subject-categorically, i.e. it shows what is obtained as a result of the work: concept, method, classification, principle, recommendation, algorithm, etc. Depending on the field and direction of science, the object component can be represented at the general scientific, general pedagogical or specific scientific level by different sets of types of knowledge (the type, or type, of knowledge here is one of the concepts of the subject category that form groups of concepts important for pedagogy; it is identified with the "type" of the research result).

At **the general scientific level**, the result is described in the most generalized form, regardless of the field to which it belongs. This is general scientific knowledge: concept, typology, algorithm, classification, concept, method, hypothesis, etc.

At **the general pedagogical level**, the result is correlated with the specific area of pedagogy that is being studied. The concept, typology, methodology, etc. can be in didactics, school science, theory of education, and other fields.

**The specific pedagogical level** complements, clarifies and details the general pedagogical level in relation to individual methods. Concretization can be based on the orientation, subject content of education, form, method, principle of organization of training, type of educational institution, age of students, etc.

**The transformative component** shows what was actually done with the object part: clarification, definition, development, etc. (basic concepts of pedagogy, changes or indicators of the process of teaching and upbringing, conditions for the development of cognitive activity, teaching methods, etc.), i.e. characterizes the resulting result as a certain type of movement of scientific thought: whether the researcher was going to develop a new method of teaching or upbringing, clarify or supplement the teaching methodology, determine the conditions for improving the effectiveness of the process, introduce a particular innovation into practice.

The transformative component is already expressed in the research tasks. It includes: clarification, definition, development, implementation, concretization, formation, development, implementation, etc. (concepts, composition, structure, content of the didactic system, concepts of teaching and upbringing, certain pedagogical goals, cognitive independence, significant communication skills, holistic professional activity, students ' readiness for work, professionally-oriented knowledge, etc.). In some cases, the object and transformative component coincide, i.e., the object and transformative component coincide. an object component can also be a transformative component. For example, an implementation can act as an independent result and simultaneously transform components for other objects (method, concept, innovation). Such a coincidence is synonymous, in fact, these are independent categories that need to be considered independently in each case.

**The concretizing component** of the result clarifies the various conditions, factors and circumstances in which the transformations of the object part of the result of pedagogical research occur. These are: clarification of the place and time within which the research is conducted (for example, the dissertation of Shevchenko A. N. " Formation of the humanistic educational system of primary school (by means of the methodology of collective organizational activity)", the dissertation for the degree of Candidate of Pedagogical Sciences, Moscow, 2001. The object component is the humanistic educational system of primary schools. The transformative component is the formation. The concretizing component - by means of the methodology of collective organizational activity. Clarifications can relate not only to individual factors, but also to various combinations of them: place, time, conditions, methods and means of training.

Each pedagogical discipline has its own means of summing up the results of the research.

In didactics, for example, they can be both theoretical and practical recommendations: clarification of the basic concepts (teaching, teaching, teaching, method, means, form, etc.); development of new methods, means and forms of teaching; identification of the laws of the educational process, the principles of testing and evaluating knowledge; development of various didactic models; study of the specifics of rural and urban schools, etc. In the history of pedagogy, the regularities of the development of pedagogical ideas, the formation of educational institutions; analysis of pedagogical thought for a certain period of time; study of the heritage of outstanding teachers of the past, etc.

**EVALUATION OF THE QUALITY OF RESEARCH RESULTS** is a systematic process of comparing the results of a particular study with the already known and recorded ideas about the novelty, relevance, theoretical and practical significance that take place in science. A necessary condition for quality assessment is to establish the actual level of the results of a particular work; to compare and evaluate the planned and actual results according to generally accepted and agreed, common criteria. The quality assessment is based on a differentiated approach. To assess the quality of completed research, we distinguish three types of criteria: general scientific, standard and specific scientific. See CRITERIA FOR ASSESSING THE QUALITY OF THE RESULTS OF SCIENTIFIC AND PEDAGOGICAL RESEARCH; RESEARCH RESULT.

**PRACTICAL SIGNIFICANCE OF THE RESEARCH** - the impact that the results of the research have (or may have) on the educational process, the methodology of teaching and learning, the organization of educational work, etc. The signs and indicators of practical significance depend on the field of research. In the works on didactics, it is usually indicated for what purpose the obtained results can be used: for the development of programs and textbooks, methodological recommendations; organization of independent work in the classroom; systematization of knowledge; planning and implementation of intersubjective relations; definitions of general academic skills, etc. In studies on history and foreign pedagogy, we mean the possibility of using the obtained conclusions in the creation of generalizing works; in special courses of pedagogical institutes; in the system of advanced training of teachers; in lectures for students on courses of comparative and foreign pedagogy, etc. One of the indicators of practical significance is the scale of possible implementation-in one or more schools, in the region, in the republic, or in all schools of the country. Some topics are focused on meeting the needs of a limited number of people, while others are focused on hundreds of thousands. The practical significance of the study also depends on the degree of readiness of the results obtained for implementation. SEE LEVELS OF PRACTICAL SIGNIFICANCE.

**THE RESULT OF THE RESEARCH** is the product of scientific and (or) scientific and methodological activities, containing new knowledge or solutions in the field of education and recorded on an information medium. The result of the research characterizes the contribution of an individual scientist or team to the theory and practice of education, allows us to compare the effectiveness of traditional and innovative teaching methods, to realize the value of educational systems and the degree of achievement of the goals set. The result should be presented in such a way that it can be used in scientific and practical pedagogical activities, disclosed from the content and internally related value side. Only under this condition can new knowledge be included in the general scientific fund and made available to other members of the scientific community. The content side of the result, what is obtained in the study, is characterized by the criterion of novelty, the value side-the criteria of theoretical and practical significance. It is important to distinguish between the potential and real value of the result. The theoretical and practical significance reflects its real value, the relevance - potential, which can be determined after the completion of the work.

The results of pedagogical research (new knowledge or solutions) are very different. These are the development of new concepts of teaching, education, and the content of education; the determination of the laws of the educational process, the identification of factors that affect the effectiveness of learning, the use of methods and means of teaching; the formulation of new pedagogical problems, etc.

The result of research, recorded in the individual consciousness as a guess, must acquire the status of a scientific fact in order to be presented in extra-project forms in such types of knowledge as hypothesis, assumption in the form of scientific concepts, a system of views, a concept, an idea, etc. Pedagogical research as its result contains precisely the knowledge that is consciously objectified by the developer for its subsequent use by other people in practical or theoretical activities.

**The theoretical results** are of an essential nature. Most often, they represent knowledge about what the object was, is, and will be, about how to understand it and gain knowledge about it. These are new concepts, approaches, directions, ideas, hypotheses, patterns, trends, classifications, principles in the field of teaching and upbringing, the development of pedagogical science and practice.

**Practical results** are of an activity nature and, as a rule, represent knowledge related to the object of research, the ways of using the object in the practical activities of people. These are new methods, rules, algorithms, proposals, regulatory documents, programs, and explanatory notes to programs. In some cases, the same result can be attributed to both theoretical provisions and practical recommendations, depending on its specific content.

The new result should be included in the general knowledge system. The place of the acquired knowledge in the list of well-known ones is determined using the Rubricator " Public education. Pedagogy". The rubricator provides an unambiguous definition of the category to which a particular document (result) belongs, as well as the assignment of each document to the minimum required number of categories, for which clear and defined boundaries are established between the categories that have logical and semantic links, and poly-hierarchical links between the categories are indicated using links and notes (see Polonsky V. M. Narodnoe obrazovanie. Pedagogy. Rubricator. - Moscow: Nauka, 1998).

**SOCIAL EFFECTIVENESS OF THE RESULTS OF SCIENTIFIC AND PEDAGOGICAL RESEARCH** - general positive changes as a result of the introduction of the acquired knowledge into practice in the standard of living of people, meeting their needs, in the accumulation of useful information, in improving the sphere of everyday life, services, etc. For most scientific and pedagogical research, a social effect is characteristic. It manifests itself in improving the level of education, culture, professional training of young people, their comprehensive development, eliminating negative phenomena in the life of society, reducing re-education, delinquency, rationalizing mental and physical labor, forming useful skills and habits, achieving a higher level of education, training, etc. See the ECONOMIC EFFICIENCY OF the RESULTS OF SCIENTIFIC and PEDAGOGICAL RESEARCH.

**The THEORETICAL SIGNIFICANCE OF THE RESEARCH** is a criterion of scientific research that reflects the impact of the research results on existing concepts, ideas, methods in the field of teaching and upbringing, theory and history of pedagogy. It characterizes the changes in theoretical concepts that occur in the pedagogical consciousness under the influence of the obtained data. This is a complex indicator that synthesizes novelty and prospects. evidentiality, conceptuality. The significance of the work can be seen several years after its publication, when its contribution to the development of fundamental and applied research is most clearly revealed. The theoretical significance reflects the level of the conceptual propositions put forward, their evidentiary value, answering the question whether they contain separate disparate ideas or a detailed concept is given, the main conclusions of which have found experimental confirmation? This is especially important for fundamental work. A study devoid of concept, eclectic or descriptive, is theoretically untenable. In applied works, this attribute is not required. Developers can use existing schemes, develop and supplement existing concepts (for example, as was the case with many researchers who developed the ideas put forward at the time by Yu. K. Babansky, M. A. Danilov, V. E. Gmurman, and other scientists). See CRITERIA FOR EVALUATING THE QUALITY OF RESEARCH.

**TYPOLOGY OF PEDAGOGICAL PROBLEMS** - the division of pedagogical problems depending on the specifics of the issues to be solved, the requirements for the content of information that different groups of users want to get to perform scientific and practical pedagogical activities in the field of education. Depending on the nature of the issues to be solved, several groups of pedagogical problems can be distinguished:

**Information problems** are aimed at answering the question of how a particular problem was solved or is being solved by domestic or foreign authors in time and space (in the present or in the past), in a particular country or group of countries. The essence of information contradictions is that the persons interested in their solution do not have enough complete and objective information about where, when and how this problem was solved. In fact, this information is already known in science and was previously published, but for various reasons it was not available to this circle of users.

Works that are based on information problems are more accurately called reviews, rather than studies. In fact, they repeat the positions already known in science, although they contain conclusions and evaluative knowledge, and do not simply retell previously published material. They give users an idea of the achievements of domestic and foreign science, save developers time and money on solving already completed research, and prevent parallelism and duplication in scientific research. Information works are heterogeneous and differ in content, volume, nature, and degree of detail of the material. The value of information works is that they perform a certain preventive function, indicate to developers what has already been done in science and practice, possible ways of research.

Conceptual problems are much less common. Their main function is to identify and explain the relationship between various factors and phenomena, to outline the leading guidelines, to formulate theoretical positions that should be guided in solving fundamental issues. Such problems include, for example, "Development of the conceptual foundations for designing the educational program of an innovative school", which is being carried out under the leadership of I. S. Yakimanskaya at the Institute of Pedagogical Innovations; "Development of didactic tools for the course" Fundamentals of School Management "for the preparation of school principals in the specialty "Education Manager"", performed under the supervision of V. S. Lazarev at the Institute of Education Management, etc.

To solve conceptual problems, it is necessary to know at least in general terms the initial state of the object, the transformation of which the work is aimed at, to clearly imagine what result (what state of the object) should be obtained as a result of the implementation of the concept, what means are necessary and sufficient.

The conceptual type of problems is typical for research in the field of didactics and the theory of education in cases where it is necessary to identify the relationship between different goals, conditions and planned results. When analyzing the experience of individual countries or studying the history of pedagogy, such problems are also developed, but as a percentage of the total number of studies in these areas, they are significantly less. Problems that are based on conceptual contradictions can be raised and solved for tens or hundreds of years, disappear from the field of view of scientists and arise again. These are the so-called "eternal problems" that humanity has been struggling with for many years: the concepts of free education, developmental learning, continuing education, etc. At the same time, it is necessary to take into account the socio-economic situation in the country, the prevailing philosophical and religious beliefs.

Conceptual works include, for example, V. V. Krayevsky's methodological manual "Teacher Training-what it means today", Biysk, 1996. In this work, the concept of the course of pedagogy is formulated, which explicitly reflects the main provisions of the concept of professional development of teachers, mainly teachers-researchers engaged in teacher training and scientific work in the field of pedagogy. The leading idea of the course, which performs a systematizing role in relation to its content, is convincingly presented. The formal features of the conceptuality of the course of pedagogy are highlighted and described: systematic and clear presentation; hierarchical structure. The content principles of conceptuality are revealed: compliance with modern requirements for higher education, reflected in scientific publications and legislative documents; completeness of the intended content of professional training of students of pedagogical universities; orientation of training in pedagogical universities on the development of pedagogical thinking of students; formation of a methodological culture that allows students to move from a content-reflective method of obtaining scientific knowledge to an activity-constructive one.

**Organizational and methodological problems** are the most common type of problems when researchers try to answer the question of how to get a particular result using the didactic and methodological tools and methods available today. In this case, theorists and practitioners need to find means to help close the gap between the goal and the results of training, education with the help of known combinations or new means.

Contradictions related to organizational and methodological problems are often found in educational situations where the goal and technology are generally clear, but the methods and means of their implementation require additional research. This type of problem dominates in particular methods, is less often represented in didactics and the theory of education, and is practically not found in works on the history of pedagogy.

As an example of organizational and methodological work, V. A. Sazonov's dissertation "Conditions for the effective use of a multifunctional set of technical means in the classrooms of professional educational institutions", which defines the optimal minimum of technical conditions necessary for creating a multifunctional set of such means, reveals the didactic conditions for using a multifunctional set, taking into account the features of synchronous functioning and the specifics of their didactic features (carriers of educational information).

Qualimetric problems are related to the measurement of the effectiveness and quality of education, the evaluation of methodological and didactic systems, the study of various personal characteristics, the assessment and verification of knowledge, etc. Such problems are developed by specialists in the field of the Theory of education and upbringing, in particular methods. Their main goal is to find qualitative or quantitative ways to measure various aspects of the educational process. The results of this kind of research are answers to the questions to what extent this method is effective, to what extent and on what grounds it is superior to others, how to measure a particular quality, level of knowledge, achievements of students, their level of education, the effectiveness of pedagogical systems and organizations. There are examples of successful answers to these questions. For example, in the PhD thesis of D. S. Gorbatov's "Criterion-based testing as a means of diagnosing students 'academic achievements" (Voronezh, 1996) developed and applied a new type of tests to test and evaluate students ' knowledge of the Russian language. The results of the material assimilation test were compared using new testing procedures and traditional didactic control tools, and individual performance indicators were identified. Organizational, methodological and qualimetric problems constantly arise as new learning tools become available, and are closely related to the level of development of the society, its scientific and technical equipment.

**Methodological problems** are related to the conduct of scientific research in education, the development of criteria for assessing the quality of work performed, the definition of the object and problem of research, relevance, novelty, theoretical and practical significance of the work performed, the logic and methodology of the research.

**LEVELS OF NOVELTY** - characteristics of novelty in the place of the acquired knowledge in the series of known ones, and their continuity.

**The level of concretization** - the obtained result clarifies the known, concretizes certain theoretical or practical provisions concerning teaching and upbringing, teaching methods, the history of pedagogy, school studies, etc.

**The level of addition-**the result expands the known theoretical and practical provisions in teaching and upbringing. The knowledge gained opens up new facets of the problem that were not previously known. In general, the innovation does not change the picture, but complements it.

For example, the principle of science in didactics was formulated by M. N. Skatkin in the 50s of the twentieth century. It included the following conditions: the scientific reliability of the information provided to students, the essence of the described phenomena is revealed, the display of phenomena in their relationship and the abrupt nature of development, familiarization of students with the most important materialistic theories, the formation of correct ideas among students about the cognizability of the world, about absolute and relative truth, familiarization with the methods of scientific knowledge.

In the 80s, L. Y. Zorina, based on her research, supplemented this principle with three more new provisions that were not previously known: correspondence of the content of education to the level of modern science; creation of students ' correct ideas about the general methods of scientific knowledge (private methods are included in the subject content and are part of the methodological principles); the most important laws of the processes of knowledge (knowledge of the theory, its elements, structure and functions) are revealed. These requirements supplement the well-known provisions concerning the principle of scientific knowledge and expand our understanding of this issue.

The level of transformation is characterized by fundamentally new ideas, approaches in the field of education and upbringing, which were not previously available in theory. There is a fundamental change of points of view, an original approach is put forward, radically different from the known ideas in this field. At one time, these were the innovative systems of education of A. S. Makarenko, V. A. Sukhomlinsky, the experience of problem-based learning in schools in Tatarstan, the Rostov experience of optimizing the educational process and overcoming the failure of schoolchildren. In didactics, this level includes research that substantiates a holistic approach to learning (M. A. Danilov, V. S. Ilyin), research on the effectiveness of the learning process and its methods (Y. K. Babansky, B. P. Esipov, I. T. Ogorodnikov), work on improving the content and process of learning in school (M. N. Skatkin, V. V. Kraevsky, I. Y. Lerner).

At the level of transformation, the discussion-hypothetical and generally recognized novelty differ. In the first case, the results obtained are not yet fully proven, and they are opposed by some scientists. A certain period of time must pass before new ideas are concretized and become generally accepted. There is a doubt about the validity of these scientific ideas. At the stage of generally accepted novelty, this doubt disappears. Some of the ideas put forward in recent years are still debatable and hypothetical. The level of transformation can be correlated with absolute novelty, when there are no analogues of this innovation. If it is implemented, it becomes a radical innovation, basic in relation to many of its derivatives. The levels of concretization and addition are correlated with relative novelty: frequent, local, and conditional.

**LEVELS OF PROBLEM FORMULATION AND SOLUTION** - the degree of theoretical understanding, semantic elaboration, and the possibility of experimental verification of problems.

The phenomenological level is characterized by the formulation of the problem at the level of" common sense", everyday representation, conscious or unconscious practical actions in the field of education. The researcher formulates the problem "head-on", noting the visible, obvious shortcomings of the practice of teaching and upbringing. The answers to these questions are born in the process of practical activity on the basis of observations, in fact, without their proper theoretical understanding. Transferring the results obtained outside of this situation can lead to misunderstandings.

**Experimental level** - setting and solving the problem requires the selection of tasks that are tested by experiment. One conceptual study of the problem is not enough. Depending on the initial concept, the methods for testing it can be simple and very complex, including short or long-term experiments. Thus, a pedagogical problem can be understood and solved at different levels, go through a number of stages, mature, reach a stage at which only its scientific solution is possible. A retrospective analysis of the problems existing in our education shows that all of them to some extent existed in the past and were previously raised and solved in the works of well-known researchers and teachers. But we can also agree with those who believe that much was done at the level of common sense and was not brought to the experimental level. Usually, the answers to the questions corresponded to the nature of the questions themselves. To solve them, there were no necessary means and opportunities.

**LEVELS OF PRACTICAL SIGNIFICANCE OF RESEARCH RESULTS**-depending on the field of application, we distinguish three levels of practical significance: particular-methodic, general-methodic, and general-didactic.

**The private methodic level** includes research, the results of which are important for solving specific practical issues related to the methodology of teaching, training or education.

**The general methodological level** of practical significance is research, the results of which are important for solving general issues of teaching methods, training and education. Thus, E. E. Minchenkova justified the methodology for selecting the content and structuring the school chemistry course, identified the criteria for selecting the content and methods of building educational material, determined the content of the normative part of the program of this discipline, specified the time for studying individual topics and sections of the course, specified the requirements for the assimilation of educational material by students.

The general didactic (branch) level of practical significance is research, the significance of which extends to many subjects, to the entire field of didactics or the theory of education. An example is the doctoral dissertations of V. G. Goretsky "Theory and practice of teaching reading to primary school students" and Yu. V. Senko "Formation of a scientific style of thinking in the learning process".

Levels of theoretical significance of research results-depending on the area of dissemination of the results obtained and their impact, we distinguish: problem, disciplinary, general pedagogical levels of theoretical significance.

**The problem level** is the research that changes the existing theoretical concepts on a number of important problems within one area of pedagogy. They form the framework of science, the basic theoretical positions on the basis of which individual problems are developed. Thus, in didactics, the works of E. V. Guryanov, M. I. Zaretsky, and E. I. Perovsky on the issues of testing and evaluating knowledge formed the basis for solving particular problems: control methods, its oral and written forms, types of control tasks, and accounting for students ' knowledge.

At **the disciplined level**, there are studies that contribute to the development of individual pedagogical disciplines: didactics, theory of education, school studies, history of pedagogy, etc., reveal the main concepts and categories of these disciplines, patterns, methods, etc.

Works whose results have an impact on **all areas of pedagogy**, go beyond its individual disciplines, and form general methodological and general theoretical positions have a general pedagogical level.

**The HEURISTIC POTENTIAL OF RESEARCH** is a set of cognitive tools and methods used by the developer to formulate and solve the selected problem. This value is variable. Research aimed at studying objects known in science, conducted within the framework of a traditional concept, with the help of methods known in this field, carries a low heuristic potential, and the probability of obtaining fundamentally new results is very small, because it is limited only to clarifying and explaining known facts, positions, processes and phenomena, which in principle can be obtained by expert means using the anticipation method.

The study of previously unknown objects, which are based on new facts, patterns, concepts, using new methods for this field of science, is characterized by a high heuristic potential. It can give fundamentally new results that cannot be obtained using the method of expert assessments. The scientific value of the research is determined by its heuristic potential, the cognitive possibilities that this work carries. The coordinate grid for evaluating this potential is the new facts, concepts, objects, and methods used by the developer. In other words, the activity of scientists should be aimed at finding new approaches and solutions. In practical pedagogy, the situation is different. A proven experience that gives positive results is quite appropriate here, and it should not be replaced with a new one just because it was previously known.

**The ECONOMIC EFFICIENCY OF THE RESULTS OF SCIENTIFIC and PEDAGOGICAL RESEARCH** is the profit that can be obtained from the implementation of the results of research in practice (for example, savings from the rational placement of the network of schools, from reducing the duration of training, reducing the number of second years, etc.). So, according to economists, an increase in class occupancy by 0.1% will result in savings of about 50 million rubles annually. Economic and social efficiency are interrelated. Qualified and more educated employees produce better quality products, learn advanced technology faster, and participate more actively in inventive and innovative activities. Social effectiveness of the results of scientific and pedagogical research.

An **EXPERT** is a specialist in a particular field who is competent in solving a given task or problem. For pedagogical expertise, scientists, teachers, teachers of universities and secondary specialized educational institutions, methodologists can be involved as candidates for experts. Candidates for experts are selected on the basis of questionnaire and documentary characteristics, self-assessment, mutual assessment, heuristic, statistical, test assessment and other methods.

Efficiency – the degree to which results are measured against costs. In relation to the field of education, there is a distinction between social and economic efficiency. Social efficiency is manifested in improving the level of education, culture, and professional training of young people, eliminating negative phenomena in the life of society, and forming useful skills and habits. Economic efficiency can be obtained by reducing the duration of training, improving its quality, rational placement of the school network, reducing the number of underachievers, etc. as a result of the introduction into practice of new teaching methods, advanced pedagogical experience. The calculation of economic efficiency should be associated with a qualitative analysis, without which it is easy to come to absurd statements about the effectiveness of the educational process

**1.7. Measurements in pedagogy**

**ADAPTIVE (SEQUENTIAL) TESTING** is a type of computer testing in which test tasks with known characteristics are consistently displayed on a computer screen, and the level of readiness of the subject is evaluated with increasing accuracy immediately after each of his answers. The next task, depending on the previously given answers of the subjects, is selected so that its level of difficulty allows you to best assess the level of readiness of the test subject. The number of test tasks is not fixed in advance, and the testing process ends when the specified accuracy of the assessment of the level of readiness of the subject is reached.

**TEST APPROBATION-**preliminary testing of a stratified sample of test subjects to determine whether the test meets its goals and a priori characteristics. Approbation is a necessary stage for the test being created before it is widely used.

**ASSOCIATIONS IN THE TEST TASK** - a verbal hint in the content of the task, allowing the test taker to guess the correct answer; evidence of the incorrectness of the task.

**A TRUE SCORE** is a latent measurement object that represents the score on a certain scale that objectively corresponds to the level of readiness of this subject under the specified evaluation method (in this case, measurement errors are conditionally assumed to be absent).

**The TEST TASK RESPONSE CATEGORY SCORE** is the score corresponding to a certain category of the response to a polytomic task, depending on the level of completeness of that answer (for example, the response category at the recognition level is one point, at the reproduction level - two points, at the level of operational application - 3 points, etc.).

**CRITERION SCORE** - the boundary value of the test score, by which a given sample of test takers is divided into those who have completed this test satisfactorily ("test") and unsatisfactorily ("non-test").

**THE PRIMARY SCORE OF A DICHOTOMOUS TASK** – the number of test participants who correctly completed this task, reflects some measure of the task's difficulty.

**EVALUATION POINTS (MARKS)** - a conditional expression of the assessment of knowledge, skills and abilities of students. It can have a digital or verbal form.

**THE TEST SUBJECT'S PRIMARY SCORE** is the sum of the points assigned to the categories of answers to the test tasks that the test subject indicated as correct. For tests consisting of dichotomous tasks -the number of correctly completed tasks, which reflects some measure of the readiness of this subject relative to this test.

**PRIMARY TASK CATEGORY SCORE** - the number of test participants who specified this answer category for a particular task as the correct answer; in the case of a dichotomous task, it matches the primary score of this task.

**The TEST SCORE** is the final quantitative expression on a certain scale of individual assessment of the level of readiness of the test subject, obtained on the basis of standardized processing of the results of the test tasks performed by the test subject.

**The BANK OF TEST MATERIALS** is a set of systematized test tasks and tests developed by various authors for various purposes, which have been tested and have known characteristics.

**ANSWER FORM** - a standard form for recording answers to the tasks proposed in the test; the test taker marks or writes down the numbers of the selected answers or the answers themselves in certain positions on the form.

**VALIDATION** is a procedure for improving the validity of a test based on the results of a criteria assessment.

**TEST VALIDITY CRITERION**-a characteristic of the test that reflects the indicator of compliance of the diagnosis and prognosis of the test with certain external criteria that characterize the object of measurement.

**The TEST VALIDITY is PREDICTIVE** - a special case of criterion validity. Reflects the effectiveness of the test prediction about the capabilities of the test subjects in the future. [7,336].

**VALIDITY of the TEST CONTENT**-a characteristic of the test, expressing the indicator of the coverage of the test tasks of the field of knowledge, the readiness in which this test evaluates.

**COMPARATIVE (CURRENT) VALIDITY** is a special case of criterion validity. Reflects the correspondence of the current test diagnosis to the results of another measurement of the same object.

**TEST VALIDITY** is a complex characteristic of a test that reflects its ability to measure exactly what it is intended for. Characterizes the ability of the general set of tasks in the tested area of knowledge to unbiased evaluate the object of measurement of the test.

**VALIDITY** - one of the most important criteria for the quality of the test, meaning the suitability of the test to measure what it is intended to measure.

**DIAGNOSTICS** is a way to obtain measurable learning indicators that provide an objective and comprehensive study of the conditions and results of the educational process, a way to clarify all the changes that occur in the cognitive process.

**PEDAGOGICAL DIAGNOSIS**-determination of the nature and scope of students ' abilities, difficulties they experience in learning, deviations in behavior based on data on the development of school programs by students, observation of their learning, the activity of studying its results, etc.

**DISTRACTOR (DISTRACTING ANSWER)** – a variant of the answer to a test, closed-type task, similar to the correct one, but not being one.

**DIFFERENTIATION OF TRAINING** is a method of organizing educational activities, which takes into account the individual typological characteristics of the individual.[5,161].

**DICHOTOMOUS (ALTERNATIVE) A TEST** task is a task that is evaluated only alternatively: performed correctly (usually symbolized by one) or performed incorrectly (usually symbolized by zero).

**TEST LENGTH** – the number of tasks in the test.

**CLOSED TASK (CLOSED FORM TASK)** – a test task with a short free answer, in which there are no answer options and the examinee must independently formulate the answer and write down the word, phrase and number. In the USE answer form, these tasks are marked with the letter B.

**TASKS WITH A DETAILED ANSWER** – test tasks for which the student must write down the answer in the form of one or more sentences or formulas. It is a special case of open tasks. In the USE answer form, these tasks are marked with the letter C. The correctness of the answers to these tasks is checked by independent subject experts.

**KNOWLEDGE** is a proven result of the knowledge of reality, its correct reflection in human thinking, acts in the form of concepts, laws, principles, judgments, is empirical, derived from experience, practice, and theoretical, reflecting the natural connections and relationships in the world-understanding, storing in memory and reproducing the facts of science, concepts, rules, laws, theories. The acquired knowledge is characterized by completeness, consistency, awareness and reality.

**The KEY TO THE TASK** is the correct answer to the test task. In the case of tasks with a detailed answer, the only formalized key to the test task is missing, and the correctness of the answer is determined by independent experts (verifiers) acting on the basis of the author's instructions and reference answers to specific tasks of this type.

**MEASUREMENT** is a procedure by which numbers or ordinal values are assigned to an observed object according to certain rules, which consist in establishing a correspondence between certain properties of the object.

**MEASURERS** – means and methods for identifying the qualitative and quantitative characteristics of students ' achievement at the levels of training according to pre-set parameters.

**An INDICATOR** is a specific manifestation of a feature or indicator that can be observed and measured. It detects and represents certain characteristics of the observed object that cannot be detected directly through the indicator. A necessary condition for the choice of an object is the presence of a direct or indirect connection between it and the characteristic that it should detect.

**INSTRUCTIONS FOR TESTING**-a document that establishes the procedure and organization of testing, which are determined by the methodology used, technical and organizational means, and planned processing methods.

**TEST TASK INSTRUCTIONS** – verbal instructions to the test subject related to the performance of the test task (choosing the correct answer from several options, solving a mathematical problem, etc.). The method of recording the correct answer is indicated (what, how and where to mark, enter, etc.). The instruction can be unified for several test tasks, if these tasks are of the same type according to the requirements for their performance.

**The FINAL STATE CERTIFICATION** is the definition and expression in the conditional marks-points, as well as in the value judgments of the members of the SAC , the degree of assimilation by graduates of the knowledge, skills and abilities established by the program, the level of diligence and the state of readiness of graduates through the activities defined by the standard of the specialty.

**FINAL CONTROL**-check of educational achievements of students, conducted after the completion of the study of the discipline, during the intermediate certification at the end of the academic period: the form of the final control is an exam: oral, written, testing.

**The QUALITY OF EDUCATION** is an integral characteristic of the educational process and its results, expressing the measure of their compliance with the widespread ideas in society about what the educational process should be and what goals it should serve. The quality of education is determined by the factors that determine its social effectiveness: content, high competence of teaching staff, the latest pedagogical technologies, material and technical equipment; humanistic orientation, completeness of meeting the needs of the population in knowledge.

**QUALITY OF EDUCATION** – a certain level of knowledge and skills, mental, moral and physical development, which students have achieved at a certain stage in accordance with the planned goals, the degree of satisfaction of the expectations of various participants in the educational process from the educational services provided by the educational institution. k.o. is primarily measured by its compliance with the educational standard k. o. Depends on the level of prestige.

**QUALIMETRY** is a method in pedagogy that allows you to translate the qualitative characteristics of a person, its development and upbringing into quantitative indicators.

**QUALIMETRY** is a branch of pedagogical theory and practice related to the measurement and evaluation of the quality of pedagogical phenomena and processes.Qualimitric competence of the head of a general education institution is a system-personal education of a specialist, reflecting the unity of his theoretical and managerial training and practical ability to comprehensively apply applied analytical and evaluation technologies in the professional sphere to solve variable problems of improving the quality of school education. This competence characterizes the administrator from the position of effective implementation of management tasks in the system "assessment of the quality of the educational process-consistency of analytical and evaluation information – management decisions that contribute to improving the quality of school education". The structure of this competence includes the interrelation of components: axiological, professional – gnostic, operational - activity , acmeological. The levels of manifestation of the qualimetric competence of the head of a general education institution are: basic – technological, administrative-discrete, system – managerial, professional – reflexive. The qualimetric competence of the head of the school includes a set of competencies: normative – legal, ethical – diagnostic, evaluation – measuring, expert – analytical; model – predictive; computer – informational.

**A TEST KEY (ANSWER KEYS)** is a set of keys to all the tasks included in a given test case (CIM).

**COMPETENCE** – the level of preparedness for activities in a particular field, the degree of mastery of knowledge, the methods of activity necessary for making correct and effective decisions.

**COMPETENCE** – the scope of authority, the field of activity in which the person has the necessary knowledge and experience.

**COMPETENCE**-the willingness to effectively mobilize internal and external resources to achieve the set goal readiness for successful activity in order to meet individual and social needs is a social order for the education system.

**COMPETENCE** – (from lat. Competentia priadlzhnost by right) – 1) knowledge and experience in a particular field, awareness. In professional and pedagogical work, there are social (awareness of responsibility for the results of work), psychological and pedagogical (willingness to communicate and cooperate), special – subject (erudition in the subject taught and the specifics of its study), personal (development of general and pedagogical abilities), competence; 2) legalized terms of authority and rights.

**COMPETENCIES** are generalized methods of action that ensure the productive performance of professional activities. This is the ability of a person to put their competence into practice. The core of K is the activity of the ability – a set of ways of acting. Since the implementation of K occurs in the process of performing various types of activities to solve theoretical and practical problems, the structure of K in addition to activity (procedural) knowledge, skills and abilities, also includes motivational and emotional – volitional spheres. An important component of K. it is an experience-the integration into a single whole of individual actions learned by a person, methods and techniques for solving problems. k. a wide range of uses that have a certain universality are called key.

**COMPETENCE-BASED APPROACH** – a method (technology) of modeling the results of education and their representation as norms of the quality of education; priority orientation to the goals – vectors of education: learnability, self-determination (self-determination), self-actualization, sociolization and the development of individuality. Fundamentally new meta-educational constructors are used as tools for achieving these goals: basic competencies, key competencies, and meta-professional social qualities. Introduction to. introduction to educational practice is constrained by the lack of effective psychological and pedagogical technologies for the formation of these new educational constructs. In the materials of modernization of education (2001), K. P. is proclaimed as one of the important conceptual principles of updating the content of vocational education.

**COMPETENCE** – meaningful generalizations of theoretical and empirical knowledge, presented in the form of concepts, principles, meaning-forming provisions. Multifunctional, interdisciplinary, and transdisciplinary courses. they are called basic K's. These include: general scientific, socio-economic, civil law, information and communication, polytechnic, and general professional sciences.

**COMPETENCE** is the result of education, which is expressed in the mastery of universal ways of activity by students.

**QUALITY CONTROL OF VOCATIONAL EDUCATION** – ensuring the conformity of the results of vocational education. The control procedure provides for three stages of control: input, intermediate and output.

**PEDAGOGICAL CONTROL** is a system of scientifically-based verification of the results of education, training and upbringing.

**CONTROL (FRENCH. CONTROLE – "VERIFICATION")** - an integral part of the management of objects and processes, which consists in monitoring the object in order to verify that the observed state of the object corresponds to the desired and necessary state provided for by laws, instructions, regulations, programs, plans, projects and agreements.

**CONTROL – 1.** Monitoring for the purpose of supervision, verification and identification of deviations from the set goal and their causes. 2. The management function, which determines the degree of compliance of the decisions made with the actual state of affairs.

**THE DISCRIMINATION COEFFICIENT (DIFFERENTIATING ABILITY) OF THE TEST TASK** is a quantitative characteristic of the ability of the test task to differentiate the subjects according to their level of readiness. It varies from -1 to +1.

**CREDIT** is a unified unit of measurement of the amount of educational work of a student. 1 credit is equal to one academic hour of classroom work per week during the academic period, which is necessarily accompanied by two hours of independent work.

**CREDIT SYSTEM OF TRAINING** - an educational system aimed at increasing the level of self-education and creative development of knowledge on the basis of individualization, electability of the educational trajectory within the framework of the regulation of the educational process and taking into account the amount of knowledge in the form of loans.

**CRITERION** – a feature on the basis of which an assessment, definition or classification of something is made, a measure of judgment, an assessment of a phenomenon. The development of criteria for certain phenomena in pedagogy presents certain difficulties due to the fact that the subject of pedagogy itself is complex and diverse in its manifestations.

**LOGIT** is a unit of measurement of the level of readiness of test participants and the difficulty of test tasks within the framework of logistic models of texts. If the difference between the mentioned parameters is 1 logit, then the probability of the correct execution of such a task by the test subject is 0.73.

**The ANSWER MATRIX** is a rectangular table, in each position of which the answers of the test participant are indicated. Usually, the row number corresponds to the test subject's number, and the column number corresponds to the test task number.

**The CRONBACH's METHOD** is a generalization of the Cuder – Richardson method for the case when the test tasks are not dichotomous.

**The CUDER-RICHARDSON METHOD** is an assessment of the reliability of the test based on the calculation of the average value of the reliability coefficient using the same formula by the Ruhlon method when the test is split into two halves, while the test tasks are evaluated dichotomously.

**The PROJECT METHOD** is a learning system in which students acquire knowledge and skills in the process of planning and performing gradually more complex practical tasks – projects.

**THE SPLIT METHOD** is an assessment of the test reliability based on comparing the test results of the subjects on two equivalent halves of the same test.

**The TESTING METHOD** is the study of a person by diagnosing his mental states and functions based on the performance of a standardized task.

**The TWO-PARAMETER MODEL** is a logistic model in which the success function depends on the difference between the level of readiness of the test subject and the level of difficulty of the test task and on the discrimination coefficient of the test subject and the level of difficulty of the test task.

**The ONE-PARAMETER MODEL** is a logistic model in which the success function depends only on the difference between the level of readiness of the test subject and the level of difficulty of the test task.

**A TEST MODEL** is one or more functional dependencies that hypothetically connect the parameters to be determined-the test participants and test tasks with such values that actually appear as a result of performing the corresponding test (for example, with the probability that the test subject correctly performs a certain level of readiness of a test task of a certain difficulty).

**THE PARTIAL ASSESSMENT MODEL** is a generalization of logistic models for polytomic test tasks that allows you to supplement the alternative assessment of tasks (performed correctly, performed incorrectly) with the assessment of a partially correct answer.

MODERATOR-a comprehensive description of the contingent of test subjects

( age, gender, region, etc.). The world report card on educational ranks is formed according to the results of international comparative studies. Currently, there are many such studies, but the most significant ones are PISA, TIMSS, and PIRLS.

**THE INTERNATIONAL STUDENT ASSESSMENT PROGRAM** – PISA (ProgramforInternationalStudentAssessment) is implemented by the Organization for Economic Cooperation and Development (OECD).

**THE KEY QUESTION OF the PISA STUDY** is "Do students of 15 years of age who have received a general compulsory education have the knowledge and skills they need to function fully in society?". The study is not aimed at determining the level of development of school programs, but at assessing the ability of students to apply the knowledge and skills acquired in school in life situations. This reflects the current trends in the assessment of educational achievements.The PISA study evaluates reading literacy and science literacy.

**The International Association for the Evaluation of Academic Achievement conducts the INTERNATIONAL STUDY ON THE QUALITY OF MATHEMATICAL AND NATURAL SCIENCE EDUCATION – TIMSS (ThirdInternationalMathematicsandScienceStudy).** The main purpose of the study is a comparative assessment of the quality of mathematical and natural science education in primary and secondary schools. The study is designed in such a way that its results allow us to track trends in the mathematics and science education of the participating countries every 4 years, when students of the 4th grade become students of the 8th grade.

**THE INTERNATIONAL PROJECT "RESEARCH ON THE QUALITY OF READING AND UNDERSTANDING OF TEXT" - PIRLS (progressinternationalreadingliteracystudy)** is a monitoring study of the quality of education. Its purpose is to compare the level and quality of reading. The study mainly evaluates two types of reading that are most often used by students during school hours and outside of school:

- reading for the purpose of acquiring the reader's literary experience;

- reading for the purpose of mastering and using information.

**MONITORING IN EDUCATION**-continuous monitoring of any process in education in order to determine its compliance with the desired result or initial assumptions.

**MONITORING OF THE EDUCATIONAL PROCESS** – systematic observation, Analysis, evaluation and forecast of the state and dynamics of changes in the results and conditions of the educational process in educational organizations.

**SKILL**-an action formed by construction, characterized by a high degree of development and the lack of element-by-element conscious regulation and control.

**RELIABILITY COEFFICIENT**-a quantitative characteristic of reliability, varying from 0 to 1; shows to what extent the test results can be considered real, and to what extent they can be attributed to the influence of random errors. It is the ratio of the variance of the measured object in the sample (usually the test score).

**TEST RELIABILITY**-an indicator of the accuracy and stability of the measurement results using the test when it is used repeatedly. Characterizes the degree of adequacy of the test reflection of the corresponding general set of tasks.

**The RELIABILITY of the TEST** is one of the criteria for the quality of the test, which refers to the accuracy of psychological measurements.

**The STANDARD SAMPLE is STRATIFIED** – a group of test subjects containing representatives of all the most significant strata that actually exist in the general population of potential test subjects, and in the same proportion.

**The NORMS (TEST NORMS)** are the boundaries between the intervals on the scale of test scores that correspond to certain school marks.

**EDUCATIONAL CHARACTERISTICS** are the main requirements for the qualities and knowledge of a person who has reached a certain educational level.

**LEARNABILITY** – individual indicators of the speed and quality of a person's assimilation of KAS in the learning process.

**ASSESSMENT** is the process of correlating the actual results of the student's activities with the planned goals.

**MARK** – a conditionally formal (symbolic) display of the result of the assessment process; a quantitative expression of the assessment of students ' academic achievements in numbers, points, or alphabetic expressions.

**The FINAL PROCESSING OF THE RESULTS** is a statistical processing performed on the basis of all the collected results for this test, on the basis of this processing, corrections are made to the preliminary test standards, and a more accurate calculation of the certification score is made, taking into account the real difficulty of the test tasks.

**ASSESSMENT** is a formalized or expert process that ends with an assessment of the level of students ' educational achievements.

**MEASUREMENT ERROR** – a statistical indicator that characterizes the degree of accuracy of individual measurements, measurement error; the value of the interval on the test score scale, within which the true student's score can actually be found with equal probability.

**PARALLEL TEST VARIANTS** – test variants that have the same characteristics.

**PEDAGOGICAL QUALIMETRY** is the study of pedagogical measurements necessary for the objective diagnosis of the process and results of training and education. Measurement-is "attributing numbers to things in accordance with certain rules" (V. M. Sokolov) Measurement involves the use of any scales: the scale of names (grouping objects into classes based on identity in relation to a certain attribute); the difference in the degrees of the attribute (equality or the relationship "more" - "less"); ordinal scale; an interval scale used when it is possible to determine not only the quantitative properties of objects, but also to record the differences between them with the establishment of a unit of measurement and reference.

**PEDAGOGICAL MEASUREMENTS** – the field of pedagogy that develops and applies measurement methods and tools for evaluating the results of educational activities of subjects.

**TEST PLAN** — a table in which each test task is correlated with a certain element of the content of the subject, a specific type of knowledge or skills6 that allows you to objectively judge the level of readiness of the subjects. The planned time for completing each test task and the entire test is also indicated.

**A POLYTOMIC TEST** task is a task that allows for several response categories, each of which is evaluated differently (for example, a completely correct answer is 2 points, a partially correct answer is 1 point, and an incorrect answer is 0 points).

**TEST USER** - a legal entity or individual who uses the test or test results to assess the level of readiness of the test subjects in a particular area.

**CERTIFICATE OF TEST RESULTS** - an individual official document of the state sample on the result of centralized pedagogical testing of a certain person with an indication of the test score received.

**SITUATIONAL VARIABLES** - a set of random factors that affect the results of testing (for example, the place and time of testing, the behavior of the testing person, the excitement of the subject, etc.).

**TEST SPECIFICATION** - a document that contains information about the goals, objectives, plan and structure of the test, as well as the main requirements for the rules of testing, processing of test results and their interpretation.

**STRATIFICATION** is a description of the structure of a certain set of objects (for example, the general population of potential test participants), and its stratification into strata.

**STRATA** - certain layers in a certain set of objects, for example, in the general population of potential test participants. They are characterized by various training programs, regional representation, living conditions, etc.

**The STRUCTURE OF THE TEST** is a set of information about the number and type of test tasks for each element of the content of the subject and for each type of knowledge or skills that allow you to objectively judge the level of readiness of the subjects. The expected difficulty level of each test task and, if possible, its discrimination coefficient are also indicated.

**A SUBTEST** is a certain subset of test tasks of a certain test that allows independent processing of test results and thus allows solving specific specific test tasks. A test may contain several subtests, possibly overlapping.

**THEORY OF MODELING AND PARAMETERIZATION OF PEDAGOGICAL TESTS (TPPT)** - the theoretical basis of pedagogical measurements, which allows you to enter the metric of the scale by which the test results are recorded. Main tasks: development of testing models; verification of the adequacy of various assumptions of real-world testing; measurement of the characteristics of test tasks and test participants in the form of evaluation of model parameters; scaling of test results and evaluation of their accuracy.

**CURRENT PERFORMANCE MONITORING** is a systematic check of students ' academic achievements on each topic and / or section of academic disciplines, conducted by the teacher leading the training sessions.

**TESTING** is a method of psychological diagnosis, " using standardized questions and tasks (tests), with a certain scale of values."

**The ACHIEVEMENT TEST** is one of the methods of psychological diagnostics that determines the degree of proficiency of the subject in specific KAS.

**Tests focused on the criterion** - one of the methods of psychological diagnostics, when applied, take into account the degree of completion of certain classes of tasks - educational, professional, etc., included in the upcoming activity of the subject.

**The TEST** is a standardized research method designed for accurate quantitative and certain qualitative assessments of individual psychological characteristics and behavior of a person by comparing these assessments with certain pre-set standards-test norms.

**The TEST** is a system of formalized tasks designed to establish the compliance of the educational (qualification) level of a person with the requirements of educational (qualification) characteristics.

**TESTING** is a method of diagnosing various aspects of an individual, using standardized tasks and questions that allow you to determine with a certain probability the actual level of development of an individual, skills, personal characteristics, individual characteristics and abilities.

**TEST BATTERY**-standardized sets of tasks that serve to measure and evaluate various achievements and personal characteristics of an individual or group.

**CONTROL AND MEASUREMENT MATERIAL**-the content of the CMM is intended for obtaining personalized information about the achievement of school graduates of basic and advanced levels of training in subjects.

**CONTROL AND MEASURING TOOL**

**Measuring instrument.** The measuring instrument includes two components. The first component– the measuring device itself, the role of which in pedagogical measurements most often, but not always, performs the test. In the most generalized form, a test can be understood as a set of control tasks in a standardized form that have the necessary system-forming statistical characteristics and provide reasonable estimates of a conceptually selected measurement variable (s) with high objectivity. Thus, in the very definition of the test, there are requirements for its quality that are not present in traditional assessment tools.

In the second component of the measuring instrument – a pre-prepared scale that serves to record the measurement results and on which estimates (quantitative or qualitative) of the measured variable are postponed. In the process of ordering grades, each element of the set of observed empirical data is assigned a certain score, which establishes the position of the observed element on the scale, where you can place raw (primary) scores (the results of summing up grades for individual test tasks) or derived scores resulting from the transformation of primary grades to improve comparability and ease of interpretation of students ' results.

A scale with deferred estimates of a variable, is the goal of the measurement. When measured with high reliability and validity, it adequately reflects the estimated characteristics and presents them without significant distortions. Depending on the number of estimated characteristics of the object, we can talk about one-dimensional (one variable) or multidimensional (more than one variable)dimensions. Accordingly, one scale or several scales were constructed based on the measurement results, the number of which in the latter case is usually equal to the number of measurement variables.Processing and analysis of measurement data. The last component of the pedagogical measurement process, which includes data processing, analysis, and interpretation, is used to identify the quality of measurement results, correct tests, and present the data in a form that is convenient for interpretation and comparison. Due to the comparability of test scores achieved in the process of processing, the results of pedagogical measurements can be used to build a qualitative analysis of student results, monitor and make informed management decisions in education.Modern interpretation of the concept of "pedagogical dimension". The modern theory of measurement appeared in the 80s of the XX century. It is built on a more rigorous axiomatic basis. In accordance with the new concepts, measurement is interpreted as the construction of a numerical function that performs an isomorphic mapping of some empirical structure into an appropriately selected numerical structure.

**ISOMORPHISM** is an important concept of mathematics that defines a number of conditions for a one-to-one mapping of two sets while preserving their properties in the process of such mapping. Although this concept first appeared in higher algebra, in our time it is used quite widely, although not quite strictly, for example, in pedagogical dimensions. Since the empirical structure and the numerical structure (scale) based on the evaluation results are isomorphic, having a scale, it is possible, without directly referring to the measured objects, to restore all their properties characteristic of the empirical structure.

Components of the pedagogical measurement process.

The process of pedagogical measurements includes:

- selection of the object of measurement (latent characteristics of objects) and their number;

- selection of empirical referents (observed characteristics of objects);

- selection of measurement procedures;

- design and use of measuring instruments;

- selection of scales (if the measured variable is one) or scales (if more than one variable is measured in multidimensional measurements);

- plotting the display of measurement results on a scale (scales in the case of multidimensional measurements) according to certain procedures and rules;

- processing, analysis and interpretation of measurement results.

Due to the unavoidability of measurement errors, the estimated characteristics of objects can take more or less accurate values, so these characteristics are usually called measurement variables. Any deviation from the standardized conditions for measuring, processing, analyzing, and interpreting the results increases measurement errors, which are most dangerous in the empirical sciences due to the latent nature of the variables. Therefore, it is so important to analyze the stability and accuracy (reliability) of test results, which distinguishes tests from traditional evaluation tools.

**VERBAL TESTS** - tests in which tasks are presented in verbal form and require the test takers to know the language.

**ACHIEVEMENT TESTS** - tasks, procedures used to assess the various aspects of students ' activities(motor, sensory, mental). In general terms, they are a time-based assessment of behavior at the end of the training and show what an individual can do in a certain period of time. Such tests assist the administration in monitoring the progress of school students and students, assessing the qualifications of specialists. They reflect the shortcomings of past training, provide guidance for planning and motivating the learning process.

**A PEDAGOGICAL TASK** is a unit of controlled material. To assess the level of training of students in accordance with the list of tasks of the educational discipline, the test uses different types of tasks: with a choice of answer, in a short answer and with a full answer. At the same time, each task is selected according to such parameters as the controlled content element (taking into account the requirements of the standard), basicity, significance, execution time, difficulty, differentiable need, etc.After selecting the units of the correlated material, the tasks are formed in the test form.The correct form of tasks is a means of organizing and effectively organizing the content of the test. It allows you to accurately express the content of the educational discipline (conducted through the separation of enlarged units of knowledge), it is clear to everyone and on formal grounds. The principles of displaying the content of the educational dissociative task of the test: significance, optimality , scientific delivery, increasing difficulty of the task, complexity and planning, the relationship of form and content, compliance with the current state of science.Tasks in the test form (or pre-test tasks)- these are tasks of a given difficulty, expressed in the logical form of a true or false statement, having the same instinct for all subjects and the correct location of the elements, a clearly defined place for fixing the answers, the same evaluation rules within the accepted form.

**Test task**. Only after checking the test-forming properties of the pre-test tasks, the static processing in the results of the testing task becomes a test task and can be turned off in the test. Test tasks are attributed to the parameters of difficulty, differentiation of needs, variativeness, local dependence, adaptability and effectiveness, which is checked empirically (without such approbation, tasks cannot be test tasks). The requirement to know the difficulty of the task is the most important system-forming feature of the test task.

**DISTRACTOR** – incorrect answer to the test task. Closed-type test tasks (with a choice of answer) contain several possible answers, among which only one is correct. However, the rest are not taken arbitrarily, but are selected according to the principle of pradopodobiya. The correct selection of distractors is part of the procedure for developing a quality test. The quality of the distractors is checked by the uniformity of the frequency distribution of the selection of different distractors (distractor analysis). If the test tasks are of a closed form, then each distractor is evaluated by the corresponding correlation coefficients, the values of which must be negative. Small values of the coefficients indicate poor quality of distractors. The method of distractor analysis is given in.

**A FACET** is a compact form of recording multiple variants of the same task. The facet principle is widely used in the design of professionally developed tests. The number of facets depends on the richness of the content and the number of variants of parallel tasks required when creating the test.

**TEST INTEGRITY** - the stable interaction of tasks of interagency quality as the best composition of test tasks that ensure the objectivity of the control of the knowledge of the subjects. The main component of the test is a task with a set of characteristics and quality indicators. The test task is a unit of the test. The requirements that apply to the test as a whole are also applied to each test task. [8,38-39].Test execution time. For the most accurate assessment of a large number of test subjects (for mass testing), comparability and sufficient differentiability of the test results, the time spent working with the test acts as a system-forming factor, on which the quality of the results significantly depends.The optimal testing time is determined empirically and specified for each test.The difficulty of the test is characterized by the total difficulty of all its tasks, while the latter cannot all be of the same difficulty, since by the definition of the pedagogical test they must also be a homogeneous test of increasing difficulty. The subjects of the average level of readiness should answer correctly about half of the tasks of the test, only the most prepared should correctly answer the tasks of the highest level of difficulty. For a long time in testology, the measure of the difficulty of each task was the proportion of correct answers to the task. [8,38-40].

**The RELIABILITY of the TEST** is the ability of the test to give similar results when applied to the same samples of test subjects, characterized by the stability and accuracy of the test results. Theoretically, the reliability of the test reflects the idea of the accuracy of the measurement of the level of preparation of the test tasks and follows from the well-known postulate about the inevitability of the error of any measurement: the measured value (X) is not equal to the true value (T). In a practical sense, reliability is understood as a measure of the sameness, repeatability, and connectivity of two dimensions of the same quality, by the same gesture, or by its parallel variants. The reliability value is calculated from the correlation coefficients between the results of double testing of the same contingent of subjects for equivalent test variants. In practice, for a number of reasons, it uses the splitting method described in. To do this, the test is divided into two equivalent halves. Then, in a standard way, the correlation coefficient between the test results for the two halves of the test is calculated. In this case, the correlation value of only half of the test is obtained, and for the entire test it will be obtained from the ratio r= 2r/1-r The quantitative measure of validity is the coefficients of the rank biserial correlation between the test indicators and the criterion measure set when designing the test. The initial data is the results of two tests of the same subjects with the same test. Reliability is judged by the degree of preservation of the rank positions of the subjects.

**The VALIDITY of a TEST** is its ability to meet the assigned tasks, i.e. it characterizes the measure of the suitability of the test results for a specific purpose. Validity is a methodological characteristic of a test's ability to measure what it was created for. The diagnostic validity of the test is the ability to use the test results to judge the structure of knowledge, skills and abilities of the subjects. The predictive validity of the test is also distinguished as the possibility of selecting students based on certain characteristics, for example, applicants who are able to successfully study at a university.Validity depends on the quality and number of tasks, the degree of completeness and depth of coverage of the content of the discipline in the test tasks by topic. The distribution of tasks by difficulty is also important. There are different concepts of validity in terms of content, criteria, competitiveness, etc.

**PEDAGOGICAL MEASURERS –** tests built on mathematical models in accordance with the tasks of measuring knowledge, passed certification for compliance with the goals and according to the specified samples have the appropriate static characteristics. Recently, the concept of "control and measurement materials" (CMM) has been included in the testing thesaurus. It seems to us that the CMM is not only a test as a pedagogical measure, but also an instruction on the testing procedure, answer forms, results processing technology, scaling methods, etc.

**The BANK OF TEST TASKS** is a set of tasks of a certain difficulty and differentiating ability, identified in the process of approbation, parameterization and use of test tasks in mass testing. Accordingly, the definition of the test bank is also introduced as a larger number of certified tests that provide pedagogical measurements in accordance with the set goals (the bank of standardized pedagogical meters, or CMM).

**A STANDARD-ORIENTED TEST** is a method and means of diagnosing test subjects. All test takers answer the same tasks, in the same time, under the same conditions, and are evaluated on the same rating scale. This method allows you to distribute the test takers by place or rating, and the goal is achieved with a relatively small number of tasks in the test. The interpretation of the results is carried out mainly with an oprah on the arithmetic mean score or percentile norms (rating), when everyone knows how many percent of the subjects have a test result worse or better than it. This interpretation of the results is called normative – oriented. The conclusion to the rating is determined by the chain: tasks - - - - answers - - - conclusions about the knowledge of the subjects - - - rating. The result can be obtained with a minimum of tasks, in a short time, efficiently, at the lowest cost, for a larger number of participants. In the normative-oriented interpretation of the test results, the first place is not so much the task of determining the completeness of the content, as finding out the comparative place, or rating of each of the test subjects , since the main goal of the normative-oriented approach is to differentiate the test subjects by the level of training. The selection of tasks by difficulty for such a test is carried out in a wide area from the weakest to the very difficult. The tests of centralized entrant testing are designed mainly for the normative-oriented interpretation of the results of pedagogical measurements.

**VARIATION OF TEST RESULTS** – the difference in test scores between different subjects. The lack of variation indicates either that everyone has the same knowledge, or that the test fails to differentiate the knowledge of the subjects. For example, in traditional exams, a five-point scale reduces variation even where it exists (for example, in entrance tests, hundreds of applicants receive C's, although the quality of knowledge of such applicants may differ greatly), while tests significantly increase it (on a 100-point scale of centralized testing, the variation in results is quite high).[8,45].

**EDUCATION QUALITY MONITORING** is a systematic and regular procedure for collecting data on important educational aspects at the national, regional and local (including schools) levels. The following elements are part of the monitoring of the quality of education:

1. Standard setting and operationalization: definition of standards; operationalization of standards in indicators (measured values); establishment of a criterion by which it is possible to judge the achievement of standards.

2. Data collection and evaluation: data collection; evaluation of results.

3. Action: take appropriate measures, evaluation of the results of measures taken in accordance with the standards [of 8.45].

**QUALIMETRIC MONITORING** – continuous (continuous) tracking activities obrozovatelnoy system, the collection of information through pedagogical measurements for active influence on obrozovatelnoy process for getting results with desired properties, characteristics, parameters[of 8.45].

**QUALITOLOGY** is the science of the quality of objects and processes created and applied in human and social practice in the field of quality (quality theory, qualimetry and the theory of quality management).In connection with the development of the theory and practice of testing, the creation of new services for assessing the quality of training of students, a number of new concepts have recently appeared, and there is a need for their application and understanding. Here are some of them that appeared as a result of the introduction of centralized testing in the educational system.[8,45-46].

**CENTRALIZED TESTING** is an independent pedagogical system that provides an objective assessment of the quality of training of students in general education institutions of the Russian Federation. Final testing of students across the country is conducted in April of each year on a voluntary basis on the principle of "one day-one exam". According to the results of current testing, certificates of the all-Russian sample are issued with an indication of the test score and the rating of the test subject. The practice of centralized testing is included in the system of education as a modern technology for assessing students ' knowledge and obtaining graduates on the scale of the entire country.Certificates can be presented to students in educational institutions for crediting the points of the centralized testing as assessments of the final certification and to universities that accept these results as assessments of entrance tests (see Appendix 1, Orders of the Ministry of Education No. 500 and 537), [8,46].

**STATINFO – STATINFO)** is an annual static report created based on the results of centralized testing of students of general education institutions of the Russian Federation. The report contains detailed information about all test takers, statistical data on test results for any sample of students (for each educational institution, for any territory: district, city, region, country as a whole), for all disciplines, indicating the average test score, average grades on a five-point scale, the percentage of students who correctly completed the tasks of the test report provide unique information for analyzing educational achievements, shown in the independent standardization of educational statistics for its analysis in order to improve the educational process[8,46].

**AVERAGE TEST SCORE** – based on the results of centralized testing, several indicators are calculated that characterize the integral indicators of students ' readiness: the average test score for the totality of all subjects in Russia, for individual regions, territories and general education institutions; the average test score for each discipline for different samples of students, which allows you to compare achievements by subject areas; the average test score by type of testing, which allows you to judge the level of educational achievements depending on the level of difficulty of tests, etc. [8,46-47].

**TEST TAKER RATING**-in addition to the test score, the certificates indicate the all-Russian student rating, which determines the place (rank) of the test taker among all participants. This allows the graduate to evaluate their competitive (competitive) capabilities. In the future, during annual tests, it will be possible to form a rating of a general education institution based on the average rating of students, and a rating of universities based on the rating of applicants, which will provide conditions for the openness of the education system[8,47].

**USERS OF THE TEST RESULTS** are students, teachers, heads of general education institutions, educational authorities at all levels (territorial, municipal, regional, universities and secondary professional institutions, the Ministry of Education of the Russian Federation, international organizations) [8,47].

**EDUCATIONAL STATISTICS** is a set of statistical indicators of the quality of training of students (students) and the quality of conditions for the implementation of the educational process for various samples of students and territories (class, school, district, city, region, country)[8,47].

Bank of test tasks – in it, test tasks are located in accordance with the content of the subject in the form of sections, subsections and topics. In each section (subsection or topic), the tasks in the test form are located by type. The full texts of the tasks, the number of the correct answer, distractors, the solution algorithm, or the stages of constructing the correct answer are given. Then the characteristics of the quality of tasks are given[8,77-78].

\* content indicators – the number of the section, subsection and topic; the type of task difficulty (1-tasks that meet the requirements of the standard; 2-tasks that exceed the level of requirements of the standard; 3 - tasks of increased complexity; 4-Olympiad tasks); the required level of knowledge, skills and abilities (1 – reproduction; 2 – sample solution; 3 – creative level); an indication of the facet capabilities[8,78].

\* approbation indicators – ideas about the sample of students of the approbation test; the percentage of correct answers for groups of students with different training of test subjects; the average time to complete the task[8,78].

\* STATISTICAL CHARACTERISTICS – results of distractor analysis (how often a particular distractor was chosen as the correct answer); indicators of correlation analysis (for standard-oriented tests); statistical indicators of the difficulty and differentiating ability of the task[8,78].

For the convenience of working with the bank of test tasks, two types of information have recently been used for each task of the bank:

\* the starting set of characteristics – the topic code, the controlled content element, the serial number of the educational standard requirement, the author's assessment of the task difficulty, the level of knowledge and skills, the recommended completion time, the correct answer, the reference to the original source, the type of task, the criteria for evaluating the task performance[8,78].

\* results of statistical processing – the number of test subjects who did not give the correct answer, the difficulty parameter, the distribution of responses by distractors, the information function and the characteristic curve of the task, the differentiating ability, the difficulty parameters for the boundary groups of test subjects, the point-biserial correlation coefficients of the response and distractors, and other results of statistical processing[8,78].

Similarly, a bank of tests is created, which are means of pedagogical measurements or control and measurement materials. The set of test indicators may be slightly different, but the principle of formation remains the same.

General principles of the scientific organization of test control:

\* the relationship of test control with education and training, which emphasizes that training without subsequent testing is ineffective, since only objective control shows in what direction further training needs to be adjusted;

\* objectivity, which aims at the need to eliminate subjectivity and bias.;

\* fairness and transparency, which means an equally benevolent attitude to all subjects, openness of all stages of testing, timely familiarization with the results of the test;

\* scientific and effective, prescribing the need to align goals and results for reliability and validity;

\* systematic and comprehensive, emphasizing the need to coordinate the goals and results of the current, milestone, thematic and final control, their scientifically based frequency;

\* scientific reliability, which requires that only true knowledge be included in the content of tasks and that disputes are excluded;

\* consistency of content, meaning the need to include knowledge related to a common structure in the test;

\* compliance with the development, which requires comparing the content of the discipline with the current state of science;

\* significance, which presupposes the selection of the most important, key knowledge;

\* representativeness, prescribing the need to include in the content of the test not only significant and scientifically reliable information, but also taking into account the completeness and sufficiency of the volume of the controlled material;

\* variability of the content, which implies constant changes, redesigning and improving the content of tests in accordance with the development of science and changes in educational standards;

\* the complexity and balance of the test content, paying attention to the need to display the main topics of the training course, a combination of theoretical, historical, factual and practical knowledge;

\* the relationship between content and form as a way to most fully reflect the content of the discipline in the content of the test; one of the important conditions for creating a quality test is the requirement of an organic connection of the content of tasks with the form of their presentation, since outside of test forms, neither the test nor its content allows you to talk about the test at all;

\* the increasing difficulty of the controlled knowledge (for a homogeneous test or within the thematic completeness of individual parts of the test, subtest);

\* the optimality of the test, which dictates the need for a strict selection of the test content. Here it should be borne in mind that it is impossible to fully invest the entire content of the discipline in one test, and therefore only the main things that students or students should learn after studying the discipline are selected for the tests (especially the final control) [8,79-80].

**A STANDARDIZED TEST** is a test that has a specification and certain characteristics that are consistently confirmed in a representative sample of test subjects. Designed for multiple use.[7,341].

Test norms, the most important statistical characteristics of the distribution of the results of testing a normative sample of test subjects. [7,341]. A

**TESTOLOGIST** is a specialist who deals with theoretical and practical issues of testology.[7,341].

Testology is a science in the field of pedagogical measurements that provides theoretical, methodological and methodological justification for the development and application of pedagogical tests to determine the characteristics and properties of a person.[7,341].

**THE DIFFICULTY OF THE TEST TASK (difficulty level)-** the main quantitative characteristic of the test task, independent of the sample of subjects and reflected on a certain scale. [7,341].

**TEST SCALES(scale)** - ordered sets of numerical estimates of test results;for different purposes, different test scales are created(five-point scale, one-hundred-point scale. [7,341].

**SCALING OF RESULTS** is the process of forming test scales and test norms of the rules for calculating test points based on the results of testing based on statistical data.[7,341].

The **SCALE** is NORMALIZED with constant step - ordinal scale indices which correspond to equidistant values of the standard normal variable with some step (for example, a ten-point scale with a =0,5).[7,341].

**ACADEMIC achievement** of STUDENT knowledge, skills and competence of the student acquired in the learning process and reflect the academic level achieved. [7,343].

**THE STRUCTURE OF EDUCATIONAL ACHIEVEMENTS** is quite complex. Academic achievements include, first of all, the knowledge, skills, and general academic competencies of the subjects. To some extent, quantitative assessments of educational achievements (test scores) can indirectly judge the degree of personal development of students (completeness and depth of knowledge, concreteness and generality of answers, flexibility of thinking, systematic and systematic learning, formation of general academic competencies, experience in practical and creative activities, adequacy and awareness of learning, perseverance, concentration, purposefulness, perseverance, goal-setting, motivation, value-semantic attitude to learning and control) [7,341].

**SCALE** is a means of fixing the results of measuring the peculiarities of objects by ordering them into a certain number system, in which the connection between individual results is expressed in the corresponding numbers. In pedagogical measurements, the scales differ depending on the nature of the peculiarities taken as the basis for their construction. The main goal of modern pedagogical testing is to reliably measure the level of preparedness of pupils or students in a particular area of ​​knowledge. In educational practice, there are four main types of scales. S.S.Stevenson gave them the following names: scale of names, scale of order (rank scale), interval scale and (ratio) scale of relations. Measurements on the first two scales are considered qualitative, and on the other two, quantitative. Scales of qualitative measurements are called “discrete”, and quantitative –“continuous”. In each of these scales, the peculiarities of the numbers assigned to objects are determined. According to these signs, the scales are listed in such an order that in each subsequent, in addition to the peculiarities of the previous scale, new ones are added. Therefore, the larger the order of the scale, the more aryametic actions are allowed to be performed on the numbers assigned to objects in these scales. The methodology of any research on measuring and assessing learning outcomes is a probabilistic approach, and the methodology is the use of the apparatus of mathematical statistics.

**SCALE** (Latin scala - ladder) is a tool for measuring continuous peculiarities of an object; is a number system, where the relations between various features of objects is expressed by the peculiarities of a number series. The rating scale is a methodological technique that allows to distribute the set of objects under study according to the severity of a common property for them. Scale is a sequence of numbers used to quantify any signs. There are the following types of scales: verbal-scale with a full verbal description of its gradations. graphic-scale, which is a segment of a straight line (its length can vary from 9 to 15 cm), divided into equal parts and provided with verbal or numerical designations a two-sided scale that allows to give a quantitative characterization of the phenomena under study with an assessment of answers with minus and plus signs, an interval-such assignment of numbers by objects when equal differences in numbers correspond to equal differences in the values ​​of the measured peculiarity (temperature scale, IQ, etc.) curvilinear scale representing from itself a dial.

**MULTI-DEGREE ONE-SIDED SCALE** is a scale with more than three answer options;

**IRREGULAR (LOGARITHMIC) SCALE** is a segment, proportional not to the displayed value, but to its logarithm.

**NOMINAL (NAMES)** - division (classification) of all objects into groups according to some characteristics (difference), (division into classes, male-female, etc.), the classes of the object are given a name and a numerical value is assigned (for example, positive statements of the subjects addressed to their groups - digit1, and negative - digit 2, etc.).

**ONE-DIMENSIONAL** is a scale that does not touch upon issues or does not include factors that are extraneous to the measured characteristics.

**RATIO (PROPORTION)** - quantitative data obtained by recalculating objects of any set (number of students, lessons, etc.), (measures of length and weight) differs from the interval one in that the zero point is not arbitrary, but indicates the complete absence of the measured property (scale of height, weight)

-numbers serving to characterize objects external to the subject of measurement

**POLAR** - scale sketched in the form of a circle radius

**ORDER (RANK)** - measurement (designation) of the degree of difference of any sign or property in different objects (grades, a list of the best students, athletes, etc.) reflect the amount of peculiarities belonging to the subject.

**STRAIGHT** - a scale that is a ruler

**UNIFORM (ARITHMETIC)** - a segment between points corresponding to proportional numerical values.

**THREE-DEGREE SINGLE-SIDED** - a scale that has three options for answering the questions, each is evaluated with different points

**SETTINGS**-numbers used to characterize some of the internal peculiarities of an individual - opinions of attitudes, motives, knowledge, skills, etc.

**NUMERIC**-scale, which is a sequence of numbers, and the intensity and direction of the scale is given by the description of only its polar positions

**SCALING** - measuring, quantifying and assigning points or other digital indicators to the characteristics under study. Scaling helps to determine the lowest and highest stages of the studied phenomenon, makes it possible to determine the intensity of phenomena and processes, allows quantifying, i.e. numerically reflecting qualitative data using scale levels. For this purpose, the tested are asked questions, answering to they must choose one of the indicated ratings. For example, in the question of doing any kind of activity in your free time, you need to choose one of the evaluative lessons. I am fond of, I do regularly, I do nothing. Scales are relatively economical because they enable the researcher to obtain the necessary data in a relatively short time.

**SCALOGRAM ANALYSIS** - a scale consisting of a hierarchical system of questions, i.e., one in which agreement with a higher-ranking judgment should lead to agreement with real judgments.

**CHAPTER 2. METHODOLOGY OF PSYCHOLOGICAL RESEARCH**

**2.1. Approaches, directions, principles**

**2. 2. Methods and techniques in psychology**

**2.3. Observation**

**2.4. Experiment**

**2.5. Questionnaire, survey, interview**

**2. 6. Testing**

**2.7. Measurements in psychology**

**2.1. Approaches. Directions. Principles**

**ACCIDENTALISM (accidentalism) -** a point of view that allows for the existence of actions or events that have no cause and can not be explained and predicted. See also Accidental Versatility, see Causal.

**ANTIMENTALISM** is a characteristics of behaviorism and a number of other schools of behavioral and so-called objective psychology, neglect of the observable internal facts of consciousness, refusal to study them. See Mentalism.

**ASSOCIATIONISM, ASSOCIATIVE PSYCHOLOGY** is historically the first explanatory trend in psychology that arose in the 18th century, whose representatives considered the association between phenomena of consciousness (sensations, perceptions, emotional experiences, etc.) as the main mechanism of mental activity. Representatives of A. - the philosophers D. Gartley, D. Priestley. J. Mill, J. St. Mill, A. Ben, G. Spencer and others.

**BEHAVIORAL SCIENCE** is a general term for any science that studies the behavior of individuals and groups; in particular, it includes psychology, sociology, social anthropology and ethology. It is often used synonymously with social science.

**BEHAVIORISM** (behaviorism) is a direction in psychology created by J. Watson and aimed at developing psychology as an objective science that refuses to use introspection and the study of consciousness (as well as the dubious sphere of the mental unconscious), and limits the field of its research to external behavior available observation. The characteristic features of behaviorism are antimentalism and anti-introspectionism; the synonym is stimulus-reactive psychology; see Neobihaviorism.

**Verificationism** is a methodological principle (see Logical positivism), according to which scientific truth is established through empirical verification of its facts. According to the principle of Verificationism, any scientifically meaningful statement can be reduced to a set of so-called "protocol sentences" fixing the data of "pure experience" and acting as the foundation of any knowledge.

**Determinism** is a general assumption about the natural causality of any event, which inspires a scientific search for relationships between variables or constantly perform. While we cannot argue that the universe is completely deterministic, the assumption of dialecticism is necessary (and not sufficient) to gain knowledge. See Psychological Determinism, Reciprocal Determinism.

**Law** - a statement about a stable relationship between events or variables (usually between independent and dependent variables), which has a high degree of probability. It is impossible to apply the traditional norm to psychological laws, according to which scientific law is considered to be refuted even with a single exception, since these laws have statistical meaning and describe more or less clear tendencies for many similar observations.

**VERIFICATION** - verification of the truth of information, clinical diagnosis, hypothesis (not only in science, but also in everyday life, in routine cognitive processes). Compare Validation, Logical positivism.

**GESTALT** (from German Gestalt-form, structure) is a whole, has peculiarities that do not have its elements; It is also characterized by invariance with respect to the transformations of its elements and, on the contrary, by the ability to dynamically transform with the constancy of the material, which indicates the relative independence of the whole from the elements. For example, perceptual G. (images of perception) can remain invariant with a complete transformation of their elements (a melody that is recognized as the same in different keys) or can change dramatically while maintaining the same elements (as in the perception of reversible figures). The concept of “G.” became the main principle of the analysis of the psyche in Gestalt psychology, which has developed and extended the provisions used in the study of perception, to other cognitive processes, skills, social psychological phenomena.

**GESTALT PSYCHOLOGY** (Gestalt psychology) is a direction in psychology that arose in Germany in the early 1910s, whose representatives (M. Wertheimer, W. Koehler, K. Koffka, K. Levin) considered the Gestalt unit of consciousness analysis. Synonym for the Berlin School. G. arose as a critical reaction to associationism and structural psychology. Consciousness in G. was considered as a dynamic whole of a field type, each point of which interacts with all the others (like elekiromagnetic and gravitational fields). As the physical world consists of integral structures, so in consciousness we find organized wholes-gestalts (which were first studied in processes of perception, later G. extended this concept to other cognitive processes, behavior, socio-psychological phenomena). A number of factors contributing to perceptual organization were determined (for example, proximity, similarity, good continuation, common destiny).

**HYPOTHETICAL CONSTRUCTION** - see Construct

**DEPTH PSYCHOLOGY** is a general name for psychological concepts (systems, schools, directions), which are based on the position of the leading role of unconscious mental factors in the regulation of behavior and the formation of human personality. Freud's psychoanalysis and the concepts of many of his followers (see Neo-Freudians) are mainly attributed to the genesis of art.

**GNESEOLOGY** (epistemology) is a section of philosophy dealing with the development of the theory of knowledge, the study of various forms of knowledge and methods of obtaining them. The synonym is epistemology.

**HUMANISTIC PSYCHOLOGY** is a psychological direction that was born in American psychology (A. Maslow, K. Rogers, R. May, E. Fromm), which recognizes the main subject of research as a person, considered as a unique integrity, possessing free will, striving for self-actualization and personal growth. As A.A. Puzyrei noted, the pathos of this direction is to move from the study of the average person, who was traditionally taken as the norm, and even more so from clinical cases to the study of exceptional personalities, as it were, at the forefront of the mental and spiritual development of mankind... Maslow called the humanistic psychology as the third force in psychology, referring to behaviorism and psychoanalysis as the other two. See also Movement for Human Potential, Phenomenology.

**MOVEMENT FOR HUMAN POTENTIAL** (Human potential movement) -1) is the same as the Humanistic Psychology; 2) an electical association of psychotherapeutic practices that is nominally based on the ideas of Humanistic Psychology.

**DETERMINISM** is a general assumption about the natural causality of any event, which inspires a scientific search for relationships between variables that perform or constantly. While we cannot argue that the universe is completely deterministic, the assumption of dialecticism is necessary (and not sufficient) to gain knowledge. See Psychological Determinism, Reciprocal Determinism.

**LAW** - a statement about a stable relationship between events or variables (usually between independent and dependent variables), which has a high degree of probability. It is impossible to apply the traditional norm to psychological laws, according to which scientific law is considered to be refuted even with a single exception, since these laws have statistical meaning and describe more or less clear tendencies for many similar observations.

**IDIOGRAPHIC APPROACH** (idiographic approach; from the Greek. Idios- peculiar + grapho-writing) -description and analysis of specific individual, unique cases, phenomena (disorders, diseases, personalities, events, groups, etc.) without striving for generalizations on other similar cases. Contrasted with the nomothetic approach. I.A. was considered as a priority in the descriptive (understanding) psychology of V. Dilthey, personalism of V. Stern, the personology of G. Murray and the psychology of personality of G. Allport. The term "I. P." (more precisely - "idiographic sciences") was introduced by the German neo-Kantian philosopher W. Windelband, but in the American psychological literature he is often associated with Allport.

**INTELLECTUALISM** - concepts that exaggerate the role of cognitive processes (intellect) to the detriment of feelings or will. Types of intellectualism: psychological (for example, Herbart's system), ethical (for example, the Socratic tradition in ethical teachings), pedagogical (the primacy of teaching over education). An example of anti-intellectualist theory in psychology is K. Levin's theory of quasi-needs. In the field of epistemological teachings, Intellectualism (with a sufficiently broad understanding of intelligence) is represented by two extreme variants: empiricism (including sensationalism) and rationalism.

**INFORMATION APPROACH** (information-processing approach) is one of the most consistent attempts to understand the structure of cognitive activity without resorting to Aristotelian division into mental processes. According to the generalizing analysis of E.N. Jafarov, in the IP, the image is considered as a process unfolded in time, which is described in terms of storing information and its translation (“reading from” and “writing to”) from one storage to another. Storage is characterized by the form of storage (code, information presentation) and duration, while the translation of information is characterized by the form of reading (for example, parallel or sequential) and speed of reading. The forms of information storage form a continuum from the most “literal” to the most “schematic”, in addition, storage can take the form of gradual fading or “reverberating” form of repetition. Some authors adhered to the synonymous use of the terms “Information approach”, “cognitive approach”, “microgenetic approach”. According to R. Klacki (1978), the book by W. Neisser “Cognitive Psychology” (1967) gave a real impetus to the development of cognitive psychology. The basic concepts of I.A.: identification, iconic memory, information, detection, recognition, scanning, pre-categorical stage, or stage of anticipation, categorical stage, or stage of focal attention, reading, repetition, extinction, storage, etc.

**CANON of MORGAN** (Morgan’s canon) is a principle put forward by Lloyd Morgan (1894) that the command of animals should be interpreted in terms of processes that are as low as possible on the scale of psychological development; they should be preferred to higher mental processes, if possible. In fact, C.M. discredited anthropomorphic descriptions and explanations of animal behavior. C.M. is a special case of the principle of economy.

**COGNITIVE PSYCHOLOGY** - see Informational approach

**CONSTRUCT** (construct. logical construct) - any internal hypothetical factor inaccessible to direct observation, for example, self-concept or attention, which: a) is used to explain the observed facts; b) can be caused by certain conditions, for example, hunger can be the cause eating behavior and itself in turn is generated by a long break in principles. Sometimes a distinction is made between two types of capitalization: hypothetical capitalization and intermediate variables, meaning that only the former have the status of reality, while the latter are convenient fictions.

**CONSTRUCTIVIST** (constructivist) - a person, who independently creates knowledge, acting, operating with objects or events, so that henceforth their peculiarities. According to the theory of cognitive development, developed by J. Piaget, this is a child, in connection with which this theory is called genetic constructivism.

**CONSTRUCTIONISM** is a frankly anti-positive approach in the social sciences, demonstrating a desire to study the life worlds of people, ways of understanding the person and the world and oneself, which at the same time are considered how to go through specific socio-historical linguistic and actions, including the interaction of the researcher with respondents . In social psychology, the main ideologist of social C. is Kenneth Gergen, who in 1985 published a programmatic article in the “American psychologist” entitled “The Tribute to Social Constructivism in Contemporary Psychology”. See Postmodernism.

**CONSTRUCTIVIST VIEW SCIENCE** (constructivist view science) is an anti-positivist methodology of science, according to which there is no single absolute truth waiting to be discovered, there are only different points of view and conceptualizations of the phenomenon that are useful and valid for specific purposes and contexts.

**CROSS-CULTURAL RESEARCH-** comparative studies aimed at clarifying the differences between different cultures and societies. In particular, cross-cultural psychological similarities and differences are studied by cross-cultural psychology.

**LOGICAL POSITIVISM**– anti-metaphysical direction in the philosophy of science, with the development of neopositivism begins; the basic ideas of L.P. were developed by a group of philosophers and scientists who were part of the so-called "Vienna Circle" (1920-1930s) - M. Schlick, R. Karnap, O. Neurath, F. Frank and others tried to combine empiricism with the logical analysis of the language of science and scientific procedures; the main criteria of true scientific knowledge is the possibility of reducing "theoretical constructs" to an empirical basis and their verification. According to reductionism, statements are divided into meaningful and meaningless, further verificationism divides meaningful statements into false and true. See Falsifiability.

**MENTALISM**- theoretical concepts that consider it impossible to explain the behavior of humans and animals without taking into account the mental phenomena, based only on environmental or physiological facts. Compare Antimentalism.

**MENTAL** – psychic, mental, sometimes mental or intellectual.

**MECHANICISM** is a point of view, opposite to vitalism and mentalism, supporting a mechanical model of explaining behavior, which uses only physical laws (for example, the hydraulic model of instinctive behavior proposed by K. Lorentz).

**NEOBICHEVIORISM** -theories and approaches of American psychology, like classical behaviorism, aimed at studying behavior, but allowed hypothetical intermediate variables in their concepts. The most original concepts in neobehaviorism developed by Ed.C. Tolman and C.L. Hull.

**Neo-Freudians** - followers of Z. Freud in psychology, which are characterized by the fact that they attached less importance to the substructure “it” and paid more attention to “this” and “I”. The major figures among N. were K. Horney, V. Reich, A. Freud, E. Fromm, E. Erickson.

**NOMOTHETICAL APPROACH** - the characteristics of any scientific approach, if it is aimed at identifying broad generalizations and establishing universal laws, are applicable) to a variety of special cases (for example, to all people or fairly wide human communities, to all groups of people, all events and situations of a certain type, etc.). Besides, from the point of the scientific theory, an individual fact has practically no scientific value, since there can be many accidental coincidences in it. Most scientific research, including social, is nomothetic. The opposite is the idiographic approach. The neo-kantian philosopher V. Windelbahn introduced this term.

**OBJECTIVE PSYCHOLOGY** is a collective name for psychological doctrines and directions that reject introspection as a method that does not satisfy the criteria of scientificity (i.e., with "subjective"), and suggest using only objective methods. Reflex teachings of I.M.Sechenov and I.P. Pavlov belong to objective psychology (behaviorism, reflexology, reactology, etc.).

**OPERATIONALISM** is one of the forms of non-positivist methodology of science, developed by the Anglo-American physicist P. Bridgman. It is argued that scientific concepts must be defined not through other concepts, but operationally, through a system of measuring operations (procedures) performed in the research process (compare: “intelligence is what is measured by intelligence tests”)

 **2. 2. Methods and techniques in psychology**

**ALTERNATIVE HYPOTHESIS** - a statistically hypothesis (often denoted as H), which the researcher is trying to confirm, assuming, for example, a difference in means or a positive correlation between variables. See Hypothesis Testing, Null Hypothesis.

**FOURIER ANALYSIS**- decomposition of a signal (for example, an electroencephalogram or a sound wave) of any shape into components having a sinusoidal shape, based on the theorem of the French mathematician and physicist Jean Baptiste Fourier (1768-1830). Continuous and periodic wave can be represented by the sum of sinusoidal waves with corresponding lengths, phases, amplitudes.

**ANALYTICAL INTROSPECTION** (analytical introspection) - one of the scientific methods of introspection, developed in structural psychology and used in the laboratories of W. Wundt and especially his student E. Titchener. To participate in the experiments, only the tested were allowed who underwent special training to acquire the ability to describe accurately the phenomena of consciousness in terms of its main elements (sensations, imaginations, feelings and their attributes - intensity, duration and length). Moreover, other tested had to eliminate from the report as a “stimulus error” (Titchener's term).

**ARCHIVAL RESEARCH** - a type of research in which a hypothesis is tested on the basis of information contained in private and public documents.

**BIVARIATION METHOD** (bivariate method) - according to R. Cattell, a method of studying personality, which follows the classical experimental scheme with the manipulation of one independent variable and registration of all influences on one dependent variable. Synonym for bivariate analysis. Compare with Multivariate method.

**SELECTED METHOD** (method of sampling) is a mathematical-statistical method for studying the parameters of a general population of any objects based on studying the peculiarities of some of these objects taken for a sample. In statistics, two cases are considered: a choice from a finite general population (for example, the choice of respondents, subjects) and a choice from an infinite general population. The latter is a conceptual fiction based on the assumption of the "possibility" of making an infinite number of homogeneous measurements of a certain quantity (for example, an absolute threshold, reaction time, or short-term memory). See Hypothesis Testing.

**HYPOTHESIS** (hypothesis) -scientific assumption about the relationship of some variables, verified empirically (compare with Pseudo hypotheses); in other words, hypothesis in operational terms formulates what researchers expect to receive as a result (at the output) of the research. As J. Glass and J. Stanley note, it is important to distinguish between scientific and statistical hypothesis. The latter may not have scientific significance. On the other hand, not all scientific hypothesis need to be checked statistically. Scientific hypothesis is a presumptive solution to a problem, i.e. the answer to a question of scientific significance. Inductive and deductive geometries are also distinguished in hypothesis: the first is hypothetical generalizations of empirical data, the latter arise in the course of deducting consequences from theory. Statistical hypothesis (denoted by the English letter H) is statement about the values ​​of statistical parameters or the relationship between them in the general complex, for example hypothesis about the equality of the correlation coefficient to zero, H.0 of the distribution normality, etc. See Alternative hypothesis, Null hypothesis.

**DEDUCTION** (deduction, deductive reasoning) -reasoning, which in accordance with the laws of formal logic comes to conclusions, being poisoned by a number of general assumptions (premises). Deductive reasoning "works" from the more general to the more specific. The development of a plan for a specific research often fits into D's scheme: everything begins with the emergence of some new general idea ("theory"); then narrower and more specific hypotheses are derived from this idea, which could be tested empirically (here the theoretical stage of the study turns into empirical).

**STATISTICAL HYPOTHESIS** - See Hypothesis, Alternative Hypothesis, Null Hypothesis.

**UNIVERSAL HYPOTHESIS** (universal hypothesis) - a hypothetical statement according to which some relationship between variables is valid without restrictions at all time and in all places. Comp. Existential hypothesis.

**FACTOR ANALYSIS** (factor analysis) is a set of mathematical methods for reducing the dimension of the space of measured variables by identifying variables closely related to each other and, on the contrary, variables independent of others. Variables that are highly correlated with each other, form "factors" (latent psychological variables). The source material for the use of F.A. serve as matrices of distances between the observed variables (indicators of different tests, indicators of individual scales and subscales of tests, measurements of any characteristics of the tested); in classical variants F.A. these are matrices of pairwise correlations; in later modifications, various distance measures. The basic algorithms of F. A. are the principal component method (more precisely, its version, which is called the principal factor method) and the centroid method. The greatest difficulty is the interpretation results of F. A. Many methods of psychodiagnostics and even theories (for example, personality theories created by R. Ketell, G. Eysenck) were created with the help of F. A. Factor analysis first appeared in psychology, but is now widely used in various sciences, such as archeology, physical anthropology, sociology.

**FUNCTIONAL ANALYSIS** ([functional analysis) - see. ABC diagnostics.

**The CENTROID METHOD** (centroid method) is one of the most popular in the past methods of factor analysis, which was developed by L. Turnstone. Synonym for center of gravity method. C.M. is a simplified version of the method of principal factors (principal components) with a smaller amount of computational work, giving only approximate results. In C.M., it is assumed that the first coordinate axis must pass through the center of gravity of a cluster of points representing features (variables) in a multidimensional space.

**PSEUDOHYPOTHESES** are statements that appear to be testable hypotheses, but in fact are not.

**EXPLORATORY RESEARCH** - see Exploratory Research.

**EXPLORATORY FACTOR ANALYSIS** - see Exploratory Factor Analysis.

**REPLICATION** – to carry out repeated research, if possible, the method of the First will be lost. R. is carried out rarely, usually this is done in connection with the theoretical significance of the original research and the presence of alleged shortcomings or errors in its conduct and description, etc.. R. is necessary to check the validity of the initial results. The very fact of replication does not mean confirmation (confirmation) of the results of the first study yet.

**SELF-EVALUATION METHOD** (self-report measure) -any technique in which information about a person is obtained from him / herself through a conversation, a semi-structured interview, a non-standardized or standardized questionnaire. Synonym for self-reporting technique. See also S-data. It should be clarified that we use a hyphen in these terms, not because it is in the corresponding English terms, first of all, as not to confuse these concepts with a narrower concept of techniques, in which a person's self-esteem is revealed as a component of his/her self-concept.

**UNOBTRUSIVE MEASURE** (unobtrusive measure) - measurement of characteristics of behavior when participants are not aware of the presence of observation. Sometimes unobtrusive is translated as “unobtrusive” and “inconspicuous”.

**STANDARDIZATION OF METHODS** (standardization) - activities to unify (establish uniformity) the parameters of appointment, materials, procedures and methods for obtaining the final indicators of a particular psychometric technique (for example, a test), which is a prerequisite for the comparability of research results using this technique by different researchers.

**SEQUENTIAL DESIGN** - a complex plan for a quasi-experimental study in ontogenetic sciences, which combines a plan of a longitudinal study with a cross-sectional plan and a plan with a time lag, that is, testees of different age groups are re-studied several times over a long period (months or years), which makes it possible to assess the influence of age factors, cohort and time measurement.

**REASONABLE EXPLANATION** (causal explanation) - an explanation of a phenomenon, demonstrating its causes, that is, indicating other phenomena that produce or entail this phenomenon. Synonymous with causal explanation.

**HYPOTHESIS TESTING** -statistical verification of alternative predictions of the experiment results; consists in comparing some statistical indicators (criteria) calculated from the sample data with the values ​​of these indicators determined theoretically under the assumption that the hypothesis being tested is correct (critical value). While making decision to reject or accept a statistical hypothesis, two types of errors are possible (see Type I error and Type II error). When describe the results of H. T., The type of criterion (static test) must be specified; the value of the obtained statistics (for example, t = 2.43); degrees of freedom and / or a similar indicator necessary to find the corresponding critical value (for example, (df = 5, N = 32); and whether the obtained value turned out to be significant (significant). If it was significant, report at what level (example p <0.05). If it was not significant, then one should only write that it was “not significant” (in foreign sources, the conventional abbreviation “ns” from “not significant” is often used). Synonym for hypothesis testing, statistical hypothesis testing.

**SEARCH STUDY** (exploratory study) - unlike a confirmatory study, this is a study (correlation, experimental, etc.), in which a reasonable hypothesis cannot be put forward in advance. Although some Russian authors prefer the term “exploratory (or exploitative) research”, “in this case, there are no grounds for discriminating against the term “exploratory”. Synonym exploratory research. Option. Which unfortunately sometimes found in the literature "exploratory study". Sometimes the term "pilot study" (abbreviated piloting) is used synonymously, but the latter is also called test study designed to test the performance and effectiveness of the technique.

**SEARCH FACTOR ANALYSIS** (exploratory factor analysis) is a very typical variant of the factor analysis procedure; in which the researcher does not first formulate and does not test exact hypotheses about the factor structure and factor configuration. The opposite of confirmatory factor analysis. Synonym for exploratory (or exploratory) factor analysis.

**FIELD RESEARCH** (field research, field study) - research taking place outside the scientific laboratory; including naturalistic observation, natural experiment and field experiment. Contrasted with laboratory testing.

**CROSS-SECTIONAL DESIGN** is an age development study plan in which a scientist compares (two or more) samples of individuals of different ages in one period of time, and draws conclusions about the developmental processes that underlie the found intergroup differences (compare longitudinal study). Synonym for genetic sectioning method, method, synchronic method, transverse strategy, Cross-sectional study, etc. Compare also sequential plan.

**DESCRIPTIVE STUDIES** (REASERCHES) 1. Research that is designed primarily to describe what happens and what exists, rather than to test some theories and hypotheses about causal or correlational references. In this sense, D.S. are often opposed to correlation and experimental studies, their distinctive feature is not a clear hypothesis. For example, D.S. include public opinion polls, when researchers only strive to establish and describe the proportions of people sharing different opinions (expectations, intentions, etc.). Synonym is descriptive research. 2. However, there is another understanding of the term D. S., when it is referred to empirical qualitative research, in which strict measuring procedures are not applied, i.e., these are studies such as naturalistic observation or case studies; it is this kind of research that W. Dilthey promoted in his descriptive psychology (see Descriptive and Explanatory Psychology).

**PILOT STUDY** – a test study. The operability of a methodology, for example, a questionnaire, is checked, and a preliminary collection of data is carried out, problems discovered at this stage will improve the research procedure and subsequently avoid methodological errors. Synonym is piloting. Compare Exploratory Research.

**PLAN OF TWIN STUDY** (twin design, twin study) - a study in which, to assess some recognized heritability, the similarity is determined for a given trait in pairs of twins that differ in zygosity (and, therefore, the degree of kinship). Synonym for twin research.

**STUDY PLAN FOR ADOPTED CHILDREN** (adoption design) - a study of adopted children are compared with their biological relatives and their adoptive parents to assess the heritability of a particular trait or traits. In our country, the law prohibits the use (including for scientific purposes) of information about kinship relations during adoption.

**NARRATIVE RESEARCH PLAN** (narrative research design) is a type of empirical research the emphasis is on oral messages (stories) of research participants and their semantic (hermeneutic) analysis.

**CROSS- SECTIONAL DESIGN** - see Cross-sectional plan.

**TIME LAG PLAN** (time-lag design) is a rare plan for a quasi-experimental study in ontogenetic sciences, consisting in comparing groups of testees of the same age, but belonging to different cohorts (generations). Like the longitudinal study design, this design is also extended over a long period of time, which is justified in order to assess the effect of the cohort.

**INDEPENDENT GROUP PLAN**(independent groups design) - an intergroup plan in which each group is exposed to only one combination of levels of independent variables; it is also assumed that participants are randomly assigned to groups (conditions).

**NON-EQUIVALENT CONTROL GROUP PLAN** – a quasi-experimental intergroup design in which participants are not randomly assigned between the experimental and control groups and thus creates a threat to internal validity. See also Quasi Experiment.

**BEHAVIORAL DIAGNOSTICS** (behavioral assessment) - an emphasis in diagnosis on specific actions that are associated with certain situational characteristics. See also ABC diagnostics.

**CONFIRMATION** (confirmation) - a type of research, which stands the empirical verification of a theoretical statement (hypothesis, theory, law, etc.). Consequently, the probability of a statement (affirmation or denial) may decrease (non-confirmation, lack of support) or increase (confirmation, support). As far as the word “C” is primarily understood as one of the results of this study, in order to avoid ambiguity, it makes sense to use the term "confirmatory, or confirmatory research" to denote the research itself. It differs from the replication type research in that the latter consists in repeating (reproducing) the method of the past research. See Confirmatory factor analysis.

**OBJECTIVITY** is a mandatory characteristic of the scientific method, requiring knowledge to be based on reliable, repeatable observations; this means that in the process of cognition, methods should be applied that allow different researchers to independently come to an agreement that a given event took place with certain characteristics. Opposite is subjectivity.

**OBJECTIVE METHOD** (in psychology) (objective method) 1) in a broad sense: a set of principles, means and requirements for psychological research, ensuring the maximum unambiguity and reliability of the results; 2) in the narrow sense, O. M. is opposed to introspection - and denotes ways of studying external, recordable voluntary and involuntary reactions of the testees.

**EXPLANATION** (explanation) - one of the most important tasks of science, which refers to find the essence of phenomena, especially their causes.

**OPERATIONAL DEFINITION**- a definition of a concept or variable by accurately describing the operations used to create or measure them.

**DESCRIPTION** is the task of science, which consists in an accurate classification of behavior or fixing the sequence of external stimuli and the corresponding behavioral acts; 2) in a broad sense, Desc. includes observation and measurement procedures, but there is also a tradition of applying this term only to non-measurable empirical procedures. See Descriptive.

**DESCRIPTIVE THEORY** (descriptive theory) - a theory that gives a systematic and standardized description of phenomena, without revealing their causes, i.e. D.T. does not contain a causal explanation. Synonym for descriptive theory.

**MODEL** (model) (broadly understood) is a simplified mental or symbolic image of an object or a system of objects, used as their "substitute" and a means of operating.

In natural sciences, M. is the description of an object by means of a certain scientific theory. M. from the fundamental and applied sciences is usually associated with the use of modelling (simulation) i.e., with the elucidation of the peculiarities of an object, process or phenomenon with the help of another object, process or its phenomenon M., some authors, for example R. Atkinson, G. Bauer and E. Crothers (1969), consider the ponyagis “M” as an analogue of the theory for a narrower range of phenomena; other authors (for example, R. Bush and F. Mosteller) prefer to use the broad term M., denoting the theory by the term “general M”. See also Mathematical Modeling. **MONITORING** (monitoring - control, eavesdropping, tracking)- a well-functioning system and process of periodic or continuous collection of certain information (for example, economic, meteorological, seismic, medical, etc.), its assessment and forecast of the development of events.

**MULTIVARIATIVE METHOD** (multivariate method) - according to R. Cattell, a method of studying personality, which simultaneously investigates the relationship between three or more variables; preferable to bivariate method.

**SCIENTIFIC METHOD** (scientific method) - a method of science, which, according to normative concepts, should be objective and include the verification of the theoretical views of researchers using empirical facts.

**NULL HYPOTHESIS, N** (null hypothesis) is a statistical hypothesis that asserts the obtained samples of observations (measured values) are random and refer to the same summation. Therefore, correlations and differences between the sample means should also be random. Refusal of N. H. means that an alternative hypothesis is accepted. Synonym for null hypothesis. See Type I error.

**GENERALIZATION** – inductive inference from a specific set of data to a broader class of potential observations. For example, we deduce inductively that a discovered fact in a random sample with some probability, also true for a general summation for which this random sample is representative. Such Gs. are explicitly probabilistic. See Induction.

**INTERGENERATION PROBLEM** (cross-generational problem) - the fact that inevitable changes in the external (mainly sociocultural) environment may limit the validity of some conclusions of the longitudinal study only for the generation of children or adults whose development was studied in this longitude; in addition, this problem undermines the intrinsic validity of cross-sectional designs because they intertwine age with a cohort side variable. See also Sequential Plan.

**META-ANALYSIS** (meta-analysis) - statistical method of combining and summarizing the results of multiple studies related to one effect; the results of different studies are considered as one large experiment, and each study as one observation. In M.-A. the magnitude of the effect exerted by the experimental influence and the main conditions on the criterion variables are determined. The size of the effect for each study is determined by dividing the difference between the mean scores for the critical variable in the experimental and control groups by the measure of the variability of the individual scores in these groups. As a result, M.-A. can be demonstrated that a number of studied conditional variables do not affect the dependent variable, which allows researchers to generalize their research results while ignoring nonessential conditions.

**FORCED CHOICE TECHNIQUE** (forced-choice technique) - any techniques in which a tested is required to choose one of a given set of alternative answers; used in various fields of psychology: in experiments on perception, memory and thinking in psychodiagnostics of personality and measurements of intelligence, etc.

**CASE HISTORY METHOD** - See Case History. Optical method.

**CORRELATION RESEARCH** (correlation design) is one of the types of non-experimental research, very common in psychology, research tries to determine whether two or more variables are related and how they are related, without trying to manipulate them or draw conclusions about the reasons. One should not think that in all C.R. the correlation coefficients are calculated, or, conversely, that the calculation of the correlation coefficients is a true sign of C.R.

**CORRELATION** is a relations between two or more variables. In simple cases of a linear relation, C. can be either positive or negative, and it is most often evaluated by the correlation coefficient. However, C. can also be assessed using covariance, regression equations, the chi-square test, etc.

**CRITICAL ANALYSIS** is a mental process of assessing and verifying the veracity (reliability, likelihood) of the information presented, as well as the correctness of one's own or other people's inferences, solutions of any problems. Synonym for critical thinking.

**LABORATORY RESEARCH** (laboratory research) – research which is conducted within the framework of a scientific laboratory. Contrasted with so-called field research.

**LONGITUDE STUDY** (longitudinal study) - as a rule, long-term and repeated study of the same testees, which is carried out to identify the patterns of individual development, is widely used in developmental psychology and psychogenetics.

**MATHEMATICAL MODELING** - the use of a mathematical language, methods and means of mathematics for modeling the studied objects (phenomena, processes) i.e. to express their structural and quantitative features or relationships in a special, symbolic form (for example, in the form of an equation, a system of equations, inequalities, a mathematical function, a formula, a matrix, a graph, etc.).

**CONVERGENT OPERATIONS** (converging operations) - a research approach based on the use of different empirical methods to study this phenomenon. From English translations, there are often synonyms convergent or converging operations. Western literature often uses a synonym for multi-method approach.

**CONTENT ANALYSIS** (content analysis) is a formalized method of studying text and graphic information, including translation of the studied information into quantitative indicators and its statistical processing. The object of C.A. may be the content of various printed publications, radio and television broadcasts, films, advertising messages, documents, public speeches, materials of questionnaires. C.A. is widely used as an auxiliary tool in psychology, sociology and other sciences when analyzing answers to open-ended questions of questionnaires, observation materials, test results (in particular, in projective methods), for analyzing results in the focus group method. C.A. can be used to research most of the documentary sources.

**CONFIRMATORY RESEARCH** (confirmatory research) - research (for example, experimental) in which an explicit theoretically substantiated hypothesis is tested; contrasted with exploratory research. If the reader is wondering why the term “confirmatory research” is not used, see Confirmation. The term "validation study" is also sometimes used.

**CONFIRMATORY FACTOR ANALYSIS** (confirmatory factor analysis) is a variant of the factor analysis procedure, in which the researcher preliminarily formulates clear hypotheses about the number of factors, about the dependencies between them, about factor loadings on certain variables, etc.

**CORRECTION FOR GUESSING** (correction for guessing; correction for chance) -calculation of the frequency of correct answers in sensory (psychophysical), mnemonic and other problems with multiple choice of answers. Synonym for random success adjustment. If m is the number of possible alternatives to the stimulus (and responses), P is the observed frequency of correct responses, then p, i.e., the corrected frequency of correct responses, is calculated by the formula: p = (P-1 / m) / (1- 1 / m). The value of 1 / m is called the probability of random guessing, or random success (instead of it, the empirical probability of a false alarm is often used).

**CLINICAL METHOD** (clinical research) -1) method, also known as case history method (case history method) or life history method (life history method), in which two tasks are jointly and interrelated, but two tasks are solved: firstly, an attempt is made to help the individual to solve personal problems and, secondly, biographical information about him is collected (the possibility of obtaining evidence using this method is extremely low) 2) the clinical conversation that Piaget used in his earlier research, that is, a flexible, semi-standardized method of posing tasks and questions to children (the researcher determined the content of the next question depending on the previous answer).

**CLINICAL RESEARCH** (clinical research-1) type of research in which a clinical method is applied (in the first sense). 2) In a more traditional sense, the use of pathology data and the purpose of studying the norm; since pathology is often a kind of exaggerated norm, it is easier to notice in it that little that is not noticed in normal cases. Thus, research in clinical psychology plays the role of a microscope, expanding the possibilities of "normal" psychology.

**QUANTITATIVE APPROACH** (quantitative approach) is the traditionally prevailing methodology of scientific research in psychology. Based on the use of measurement procedures in the collection of empirical data or the quantification of primary qualitative data. Quantitative data is open to a wide variety of mathematical processing, statistical hypothesis testing, and modeling.

**QUANTITATIVE RESEARCH** is a common type of empirical research, in which measurement procedures are used, the results are presented in numerical lice (usually the data obtained using 'strong' scales, interval and proportional), and at least some statistical procedures and indicators are used.

**CAUSAL EXPLANATION** - See Causal explanation.

**CAUSAL** (causal) – causal, c. explanation, the opposite of the acausal (compare Accidentalism).

**QUALITATIVE RESEARCH** is a type of research typical for cultural anthropology (ethnography) and sociology, which consists in a semantic analysis of behavior and narrative information obtained during the research (see Interview). According to S. Kwale, Q. R. can use non-strict forms of measurements (for example, nominal scales, ordinal scales) and rather strict frequency data (see: for example, Content Analysis, Frequency), due to which there is no theoretical reason to insist on a rigid dichotomy of qualitative and quantitative research and methods.

**QUALITATIVE DATA** (qualitative data) - non-quantitative data, mainly of a verbal nature, but may also consist of video materials, drawings, products of constructive activity. As a rule, Q. D. admits quantification and coding for further mathematical processing, statistical testing of hypotheses, and computer modeling. In addition, it is customary to refer to variables as the number of variables whose numerical values ​​correspond to the nominal or ordinal scales.

**QUALITATIVE APPROACH** - methodology focused on conducting so-called qualitative research and obtaining so-called qualitative data without their subsequent quantification and statistical processing; Q. A. is limited to subjective semantic analysis and intuitive grasp of the essence of the available data. See Quantitative Approach.

**CLUSTER ANALYSIS** (cluster analysis) is a series of mathematical procedures for multivariate data analysis that allow partitioning (classification) of a set of objects into a number of classes based on multidimensional measures of proximity between objects, so that objects belonging to one class are more similar to each other than with objects of other classes.

**DESCRIPTIVE** – (descriptive). The opposition of the method (approach) to the measurement method is often encountered, which is approximately analogous to the ratio of the qualitative and quantitative method (approach). See also Descriptive Studies.

**DIARY** (diaries) is a special research method. Daily records that respondents are asked to make to keep track of specific events (e.g. emotions, purchases, pain, TV viewing).

**INDUCTION** (induction) - the process of generalization, inference from frequencies to the general, leading to an increase in information compared to that which is contained in the observed data. J. Mill in his “System of Logics” defined induction as the mental process of “finding and proving general sentences.” Induction is the creative stage of the scientific method; its result can be hypotheses, laws, and principles. However, the inductive inference is not entirely reliable. Compare with Deduction.

**CROSS-SECTION RESEARCH** (cross-sectional study, cross-sectional design) - in developmental psychology (age psychology), a research design in which the different age tested groups are studied and compared at approximately the same time (age is an intergroup variable). See also Cross-section plan.

**STUDY OF A SEPARATE CASE** (case study) - a method and type of research in which a researcher collects extensive information about the life of one or more individuals, about one rare event, a separate organization. Synonym for idiographic research, clinical research, clinical research type. See also Idiographic Approach, Case History. Clinical method.

**A HISTORY OF AN INDIVIDUAL CASE** (case history) is a non-experimental type of research in which a systematic collection of data is carried out to create a detailed description of the development of a local historical process or the life of an individual person. The collection and analysis of initial data often takes years. See also longitudinal study. There is also a translation of case history as “case history”.

**Q-SORTING** (Q sort, Q-sort technique) -type of methods for personal assessment. The personality profile is compiled on the basis of the result of sorting a set of cards, each contains a statement about some personality trait (for example, “has a wide range of interests”); the testee lays out the cards in 9 categories, ranked from the least characteristic (for the person being assessed) descriptions (1 point) to the most characteristic (9 points), the technique was used by K. Rogers as a tool for diagnosing the self-concept (for example, I-real and I-ideal). The emergence of the procedure dates back to about 1935, when it was independently proposed by G. Thomson and W. Stephenson. It should be noted that the buke from "Q" in the name is chosen arbitrarily and does not mean anything. See, for example, California Q-set, Sorting Cards.

**S, Ss** - generally accepted abbreviations in the English language literature from subject (“subject”) and subjects (“subjects”). See also Subject, Participants.

**AUTOCORRELATION** (autocorrelation) - a method of signal processing in which the signal is delayed and then the delayed signal is multiplied by the original. It helps to isolate the periodic components of the signal.

**METHOD OF RESEARCH** (method research) - a set of certain rules, techniques, norms of scientific knowledge, including for obtaining reliable and valid empirical information, a critical analysis of the research. It is necessary to distinguish, according to its measure, three options for understanding the term “M. R.” (in relation to: empirical research): a) a method as a design (scheme) of research (for example, an intragroup design, an experimental design, a genetic research plan, etc.); b) a method as one or another method “(procedure, technique) of data collection (for example, the method of paired comparisons, the NEO P1-K questionnaire‚ the method of unfinished sentences, etc.): c) a method as a method of data processing, including statistical methods for testing hypotheses, methods of multivariate data analysis, in particular, multiple linear regression and factor analysis.

**ABC-DIAGNOSTICS** (ABC assessment) - identification of significant, controllable, causal functional dependencies related to a specific type of individual behavior. Synonym for ABC assessment is behavioral diagnostics, functional analysis. Behavioral diagnostics includes the identification and measurement of related events, the sequence of which is described by the chain ABC formula: A – is antecedent, i.e., events in the environment preceding a given behavior, B-is the target behavior itself and C - its consequences. Time series analysis is used to empirically test causal hypotheses.

**CALIFORNIAQ-SET** is a personal Q-sorting technique. Consists of 100 paragraphs-phrases, which describes a separate personality trait and is presented on a separate card. The evaluator must categorize (sort) these cards into 9 categories ranging from “completely uncharacteristic” for the person being assessed to “highly characteristic”. Items that are neither uncharacteristic nor characteristic are placed in category 5. Usually, a frequency distribution is obtained that looks like a normal distribution, i.e. most of the cards are placed in the center and very few at one end. The method was not created using factor analysis or any other formal procedure. It was created by a team of clinicians and psychologists to describe a variety of real-life cases (1961).

**EXPERIMENTAL PSYCHOLOGY** (experimental psychology) is an approach to the study of psychological problems, based on the application of the experimental method and the organization of experimental research.

**EMPIRISM** (empirism) -gnoseological concept, according to which the true picture of the world is formed by observation and experiment, that is, by empirical research; the corresponding cognition methodology. Compare with Positivism, Rationalism, Logical positivism.

**EPISTEMIOLOGY** (epistemology) is the same as gnoseology.

**ETHICS OF RESEARCH** (ethical research) - a set of questions and standards of ethical nature associated with research on humans and animals.

**FUNCTIONAL PSYCHOLOGY** ([functional psychology) is a direction in American psychology of the late nineteenth and early twentieth centuries, which set the task of studying the functional role and significance of mental processes in the processes of behavior and adaptation to the environment. The evolutionary teachings of G. Spencer and Charles Darwin influenced the formation of the functional psychology. The most consistent expression of functional psychology was obtained in the works of Chicago (G. Land, D. Angell, G. Carr. J. G. Mead) and Columbia (R. Woodworth) psychologists schools, as well as in the works of J. Dewey.

**HOLISTIC APPROACH** (in psychology) - an approach to the study of mental phenomena and behavior as holistic formations, not reducible to the associative sum of elements. Synonym for holistic approach, holism. Originally developed, for example, in Gestalt psychology, V. Dilthey (see Descriptive and explanatory psychology), L. S. Vygotsky in research of higher mental functions and problems of age periodization, has now become a common place in the methodological programs of many schools and concepts.

**PURE RESEACH** is the same as Fundamental Research.

**ECOLOGICAL PSYCHOLOGY** (ecological psychology) -1. The name of the approach to the study of perception and behavior, which was developed by the American psychologist J. Gibson (1904-1979). Synonym for ecological optics. 2. (Environmental psychology) - direction of research, which applies psychology to understanding human behavior in relation to the environment. Synonym for psychology of the environment. In some translated editions, the term “environmental psychology”, “environmental load” has already appeared. Behavioral geography can be considered as one of the directions of the E.P., but only with more specific boundaries and objectives. 3. One of K. Levin's students, the American psychologist R. Barker, since 1947 has been conducting research on E.P. They mainly focused on the careful recording of people's daily behavior. The theoretical program and methodology of these studies largely coincide with those that develop within the framework of human ethology. The main research method is observation; the subject of research is the relationship between man and the environment, taken in their natural form. 4. In the understanding of U.Bronfenbrenner, E.P. is a scientific study of gradual mutual adaptation throughout life between a developing personality and his immediate environment; moreover, this process is significantly influenced by a broader social context.

**FALSIFIABILITY** is a criterion for evaluating the scientific nature of theories. A theory is falsifiable if it is capable of generating hypotheses that can be empirically refuted. According to K. Popper: 1) it is F., and not verification, that is the criterion of scientific character, 2) general theories are basically impossible to verify, since many theories can be developed to explain any set of data, and 3) because verification is based on induction, and inductive inference is not completely reliable; 4) psychoanalysis is not a scientific theory, because it can explain everything and in fact does not make accurate predictions that could be empirically refuted.

**PHENOMENOLOGY** (phenomenology) - the study of the subjective aspects of human experience, i.e. how a person feels and categorizes life events; great importance is attached to the consideration of the experienced characteristics of the “I” (myself) and interaction with other people and the environment. Phenomenology focuses not on behavior and objective facts, but on the inner picture of the events experienced by the personality.

**PHENOMENOLOGICAL APPROACH** (phenomenological approach) -methodological orientation in humanistic psychology, giving increased importance to the study of direct human experiences, subjective aspects of experience.

**FUNDAMENTAL RESEARCH** (basic research) - a type of scientific research aimed at discovering and explaining fundamental laws, the development of scientific knowledge, its systematization and empirical verification, regardless of the possibility of practical use of the results to solve certain urgent social problems. History, however, shows that such research sooner or later led to the solution of applied problems. A related concept is “fundamental science”. Synonym for pure research. Compare with Applied research.

**FUNCTIONALISM** (functionalism) - methodological orientation (and scientific approach) on the priority research of functions (practical value, biological meaning) of certain systems, phenomena, objects. Sometimes opposed to structuralism and historicism. Functionalism is characterized by the recognition of the logical or ontological primacy of function over structure and development. In a logical sense, the primacy of function is expressed in the fact that knowledge of function is recognized as a necessary precondition for understanding and explaining structure and development. In the ontological sense, the primacy of function over structure and development is expressed in the recognition of functioning as the leading factor in the formation and development of structure.

**Stimulus-response psychology** is the same as Behaviorism.

**STRUCTURALISM IN PSYCHOLOGY** (structuralism) is an approach in psychology developed by W. Wundt and his student, the American psychologist A. Titchener. The main task of psychology is to study the structure of consciousness, dividing its phenomena into elements of three types (sensations, feelings and representations) that do not lend themselves to further analysis (elementarism, atomism), clarifying the associative laws of combining elements into structures (associationism) and establishing connections between the phenomena of consciousness with internal and external conditions. The main method for obtaining empirical data is analytical introspection, which requires the subject to avoid the “stimulus error” of substituting descriptions of the subject content for the description of sensory elements. Synonym for structural psychology.

**FALSIFICATION** (falsification) - research approach. Defended by the philosopher-methodologist K. Popper. Concluding in testing theories by trying to refute them.

**MORGAN CANON** (Morgan’s canon) - a principle put forward by Lloyd Morgan (1894), stating that the command of animals should be interpreted in terms of processes that are as low as possible on the scale of psychological development; they should be preferred to higher mental processes, if possible. In fact, C.M. discredited anthropomorphic descriptions and explanations of animal behavior. C.M. is a special case of the principle of economy.

**RETROSPECTIVE SCIENCE** (retrospective science) is an approach to the study of ontogenetic development in which the key events of a person's biography are investigated at a later stage of life, often by questioning and speculative conclusions about the causal influence of such events on personality formation. This approach has traditionally been practiced in psychoanalysis. Compare with Prospective science.

**RECIPROCAL DETERMINISM** (reciprocal determinism) - the mutual influence of variables on each other; for example, A. Bandura's theory emphasizes the mutual influence of three types of factors: environment, behavior and internal factors.

**SOCIAL CONSTRUCTIONISM** (social constructionism) - see Constructionism.

**STATISTICS** (statistics) -science about methods of analysis of mass phenomena, based on the theory of probability; allows you to assess the reliability and accuracy of conclusions about the population as a whole based on limited statistical material (sample).

**STYLE OF SCIENTIFIC THINKING** (style of scientific thinking) is a concept introduced into methodological circulation by scientists, that is, proceeding from the methodological request of science itself (microbiologist L. Fleck, physicist M. Born). The concept “S. Sc. Th.” contains in itself: 1) the idea of ​​the internal semantic integrity of the history of cognition, realized in style as a specific characteristic of the language of different periods of the development of science; 2) the idea of ​​polyvariety, which presupposes the stylistic diversity of expression in the scientific language of knowledge about the same fragment of the world. The translation of M. Born's book “Physics in the Life of My Generation” actually stimulated the use of the concept of “thinking style” in Russian methodology. Later, however, this term was supplanted by T. Kuhn's term “paradigm”, the sociologizing connotations of which actually overshadowed the appeal to meaningful communication of scientists contained in the concept of the style of scientific thinking.

M. Born used this term, first of all, for the integral characteristics of a new stage in the development of physics. But at the same time, in his interpretation, the general methodological, general scientific meaning of the concept S.Sc.T. “I do not want to say, Born wrote, that there are any immutable principles, a priori in the strict sense of the word. However, I think that there are some general tendencies of thought that change very slowly and form certain philosophical periods with their characteristic ideas in all areas of human activity, including science. Pauli, in a recent letter to me, uses the expression styles: style of thinking - styles not only in art, but also in science. By accepting this term, I assert that there are styles of physical theory, and it is this circumstance that gives a kind of stability to its principles. The latter are, so to speak, relatively a priori in relation to this period. If you are familiar with the style of your time, you can make some careful predictions. At least you can reject ideas that are foreign to the style of our time.”

**PSYCHOLOGICAL DETERMINISM** (psychological determinism) – a concept that assert mental phenomena (whether we, emotions, sensations) and human actions have causes and effects, are included in natural causal chains with each other and with other factors and conditions.

**RATIONALISM** (rationalism) - a methodological and epistemological concept (paradigm), according to which science (true knowledge) should develop exclusively or primarily with the help of deduction according to the laws of formal logics. Opposite. Empiricism (including sensationalism). Extreme rationalists (for example, Plato, Descartes, etc.), believe that the initial premises are not deduced empirically either, but are comprehended intuitively and are innate ideas.

**REDUCTIONISM** (reductionism) -methodological orientation to explain the phenomena of a certain subject area mainly based on the regularities, inherent more elementary phenomena; for example, explaining social problems entirely in terms of individual psychology and mental phenomena in terms of biology. It is not entirely correct (from the point of view of etymology) that they sometimes speak of "reduction up", i.e. explanations that are prohibited by Morgan's canon. For another meaning, see Logical Positivism.

**PROSPECTIVE SCIENCE** (prospective science) - an approach to the study of ontogenetic development, in which the main type of cognition is longitudinal research. Compare with Retrospective Science.

**PSYCHOANALYSIS** (psychoanalysis) - 1) the theory of personality, developed by Z. Freud on the basis of scientific analysis and generalization of the material of psychoanalytic practice; according to P.`s theory, unconscious processes play a leading role in the development and functioning of the personality; 2) the system of psychotherapy developed by Freud, which seeks to reduce neurotic conflict and anxiety by "airing" repressed unconscious impulses during regular meetings between the patient and the analyst.

**PSYCHOANALYST** (psychoanalyst) - a psychotherapist, usually having basic training as a psychiatrist and using methods of psychoanalysis, originally proposed by Z. Freud for the treatment of neuroses and other mental disorders.

**PSYCHODIAGNOSTICS** (psychodiagnostics) is a branch of psychology engaged in the development of a measuring approach to the description, classification and ranking of the psychological qualities of people of practical importance. P. is an application of general provisions and models of psychometrics to theoretical and applied problems of personality psychology.

**PSYCHOHISTORY** (psychohistory) - usually psychological biographies of famous people, in which they seek to explain personality traits and basic facts of behavior by correlating biographical facts with historical events and concepts of personality. E. Erickson published P. dedicated to such famous persons as M. Luther, A. Hitler, M. Gandhi and B. Shaw. Synonym for psychobiography.

**PSYCHOLOGISM** (psychologism) - in literary criticism, this is the name given to the style characteristics of works of art, in which a subtle psychological analysis of mental phenomena and behavior is given and the limits of psychology and literary criticism, P. often considers as something worthy of condemnation and eradication. According to N.O.Lossky, “P. is a direction that considers all the phenomena included in the circle of any science as mental processes, and, accordingly, asserts the laws that they are subject to psychological laws.” P. often considers fruitful approaches, directions and schools that actively use psychological theories and methods. It is necessary to distinguish psychocentrism from P., which is characteristic mainly of psychologists themselves, and is expressed in a somewhat naive idea of ​​the structure of human knowledge, in which psychology occupies a central and basic position. In general cultural terms, the conclusion of G.P. Fedotov, P. is a special case of persecution of humanism and “without which a person ceases to be a person”.

**UNDERSTANDING PSYCHOLOGY**- the direction in German psychology of the 19th century - the beginning of the 20th century, which considered the main task of psychological research not to a causal explanation of mental phenomena, but to the attention of a person, his/her inner world, which requires the involvement of the concept of value, which was developed in philosophical students about value (G. Rickert, M. Scheler, etc.). The term “U.P.” introduced by Ed. Spranger, is comparable to the term “descriptive psychology”, which was used by W. Dilthey (see Descriptive and Explanatory Psychology).

**POSTMODERNISM** - a broad current in modern culture, mainly in art, philosophy and social sciences. Its various variants found expression in the works of the tiki of French thinkers like J. Baudrillard, J. Derrida, M. Foucault, and J. F. Leotard, who strive to oppose “P.” to the Age of Enlightenment, rationalism, and positivism. In psychology, postmodernism ideology is close, in particular, to humanistic psychology and the phenomenological approach, narrative psychology and social constructionism.

**APPLIED RESEARCH** - research, the main purpose is to solve specific practical problems, as well as exploratory research aimed at developing ideas and methods that can be applied in various practical areas (for example, methods of diagnosing deception, the theory of the systematic formation of mental actions). Such studies are often carried out in the “field” conditions. A related concept is “applied science”. Compare Fundamental research.

**PRINCIPLE OF ECONOMY** (principle of parsimony) - is a regulatory principle adopted in all sciences and requiring the simplest possible explanation of the phenomenon to be considered more preferable, until data are revealed that indicate the opposite. As one of the criteria for assessing the quality of scientific theories of PE prefers economic theories, i.e. those that use relatively few explanatory principles to explain a wide range of observations. Synonym for the law of economy Compare Morgan Canon.

**PARADIGM** (paradigm, from the Greek example, sample) -1. In linguistics, P. is a system of forms of the same word, in particular, represented in the form of a certain table (declension of a name, conjugation of a verb). 2. An example from history, taken for proof, comparison. 3. In Western literature, it is often used as a synonym for “methods” or “tasks”: for example, Sternberg paradigm, paradigm of crossword puzzle, etc. 4. In the historical and scientific concept of T. Kuhn, there is a rather broad scientific concept and the associated methodology, which are accepted in this discipline as the main, leading and normative. The absence of such, i.e., the coexistence of many different methodological approaches, according to Kuhn, is a sign of a “time of troubles” (an abnormal state) in science.

**PERSONALISM**- a number of directions in psychology and philosophy, considering the personality as the main creative force in the history of culture and society, the highest value, as well as a special subject of research requiring a specified methodology. Personalism ideas were developed by N. A. Berdyaev and L. Shestov, V. Stern, M. Calkins, E. Munier, and others. See also Idiographic Approach.

**POSITIVISM**- philosophical direction, created as the term positivism itself, O. Comte (1830s), who wanted to abolish metaphysics and its claims to the leadership of the sciences, arguing that the highest form of knowledge is observation and measurement data, which fully fits into the concept traditional empiricism. Major figures were K. Horney, W. Reich, A. Freud, E. Fromm, E. Erickson.

**NOMOTHETIC APPROACH**- the characteristics of any scientific approach, if it is aimed at identifying broad generalizations and establishing universal laws, (are applicable to) many special cases (for example, to all people or fairly wide human communities, to all groups of people, all events and situations of a certain type, etc.). In addition, from the nomothetic approach point of view an individual fact has practically no scientific value, since there can be many accidental coincidences in it. Most scientific research, including social is nomothetic. The opposite is the idiographic approach. The term was introduced by the neo-Kantian philosopher V. Windelbahn.

**OBJECTIVE PSYCHOLOGY**- the collective name of psychological doctrines and directions that reject introspection as a method that does not satisfy the criteria of scientific character (i.e., with "subjective"), and suggest using only objective methods. Reflex teachings of I.M.Sechenov and I.P. Pavlov belong to objective psychology. Behaviorism, reflexology, reactology, etc.

**OPERATIONALISM** - one of the forms of non-positivist methodology of science, developed by the Anglo-American physicist P. Bridgman. It is argued that scientific concepts must be defined not through other concepts, but operationally, i.e. through a system of measuring operations (procedures) performed in the research process (compare: “intelligence is what is measured by intelligence tests”).

**DESCRIPTIVE AND EXPLANATORY PSYCHOLOGY**- the terms of the German philosopher, historian and psychologist W. Dilthey (1833-1911) for two types of psychology that are opposite in methodological principles and tasks (P.). “Explanatory Psychology” is focused on the natural science tradition of cognition (which is typical, for example, for associations and behaviorism), in which priority is given to the experimental method, abstract analysis in terms of elements (soul or behavior), the search for general laws and causal explanation (nomothetic approach). This approach, according to Dilthey, does not allow one to describe and understand the true picture of the mental life of personality. Therefore, the main efforts of Dilthey were aimed at creating psychology of a different type, which he called “descriptive Psychology”. The latter sets itself the task of describing and comprehending mental life in its concrete integrity, expedient development, in close connection with social values, to an abstract causal explanation, considers works of art to be a valuable source of psychological knowledge. Later Ed. Spranger called it “understanding psychology”.

**CONSTRUCTIONISM**- a frankly anti-positive approach in the social sciences, demonstrating a desire to study the life worlds of people, ways of understanding the person and the world and oneself, which at the same time are considered how to go through specific socio-historical linguistic and actions, including the interaction of the researcher with the respondents. In social psychology, the main constructionism social ideologist Kenneth Gergen, who published a programmatic article in the “American psychologist”, entitled “Data of Social Constructionism in Modern Psychology” in 1985. See Postmodernism.

**CONSTRUCTIONIST VIEW OF SCIENCE** (constructivist view science) -anti-positivist methodology of science, according to which there is only one absolute truth waiting to be discovered, there are only different points of view and conceptualizations that are useful and valid for specific purposes and contexts.

**CROSS-CULTURAL RESEARCH** - comparative studies aimed at clarifying and differences between different cultures and societies. In particular, cross-cultural psychological similarities and differences are studied by cross-cultural psychology.

**INFORMATION APPROACH** (information-processing approach) - one of the most consistent attempts to understand the structure of cognitive activity without resorting to Aristotelian division into mental processes. According to the generalizing analysis of E.N. Jafarov, in the information approach, the image is considered as a process unfolded in time, which is described in terms of storing information and its translation (“reading from” and “writing to”) from one storage to another. Storage is characterized by the form of storage (code, information presentation) and duration, while the transmitting of information is characterized by the form of reading (for example, parallel or sequential) and speed of reading. The forms of information storage form a continuum from the most “literal” to the most “schematic”, in addition, storage can take the form of gradual fading or “reverberating” form of repetition. Some authors adhered to the synonymous use of the terms “cognitive approach”, “microgenetic approach”. According to R. Klacki (1978), a real impetus to the development of cognitive psychology was given by W. Nasser’s book “Cognitive Psychology” (1967). The basic concepts of information approach are identification, iconic memory, information, detection, recognition, scanning, pre-categorical stage, or stage of anticipation, categorical stage, or stage of focal attention, reading, repetition, extinction, storage, etc.

**DEEP PSYCHOLOGY** (depth psychology)- the general name of psychological concepts (systems, schools, directions), which are based on the position of the leading role of unconscious mental factors in the regulation of behavior and the formation of personality. Freud`s psychoanalysis and the concepts of many of his followers (see Neo-Freudians) are mainly attributed to deep psychology.

**HUMANIST PSYCHOLOGY**-psychological direction, which was born in American psychology (A. Maslow, K. Rogers, E. Fromm), which recognizes the main subject of research as a person, considered as a unique integrity, possessing free will, striving for self-actualization and personal growth. As A.A.Puzyrei noted, the pathos of this direction is to move from the study of the average person, who was traditionally taken as the norm, and even more so from clinical cases to the study of exceptional personalities, standing, as it were, at the forefront of the mental and spiritual development of mankind. Maslow called humanistic psychology the third force in psychology, referring to behaviorism and psychoanalysis as the other two. See also Movement for Human Potential, Phenomenology.

**THE MOVEMENT FOR HUMAN POTENTIAL**- 1) the same as Humanistic Psychology; 2) nominally based on the ideas of humanistic psychology electic association of psychotherapeutic practices

**VERIFICATIONISM**- methodological principles (see Logical positivism), according to which scientific truth is established by empirical verification of its facts. According to the principle of V., any scientifically meaningful statement can be reduced to a set of so-called “protocol sentences” fixing the data of "pure experience" and acting as the foundation of any knowledge.

**VERIFICATION** - verification of the truth of information, clinical diagnosis, hypothesis (not only in science, but also in everyday life, in routine cognitive processes). Compare Validization, Logical positivism.

**GESTALT** (from German Gestalt-form, structure) – an entity, with some peculiarities that its elements do not have; It is also characterized by invariance with respect to the transformations of its elements and, on the contrary, by the ability to dynamically transform with the constancy of the material, which indicates the relative independence of the whole from the elements. For example, perceptive gestalt (images of perception) can remain invariant with a complete transformation of their elements (a melody that is recognized as the same in different keys) or change dramatically while maintaining the same element (as in the perception of reversible figures). The concept of “Gestalt” became the main principle of the analysis of the psyche in Gestalt psychology, which extended the provisions originally developed in the study of perception, to other cognitive processes, skills, social psychological phenomena.

**GESTALT PSYCHOLOGY**- is a direction in psychology that arose in Germany in the early 1910s, whose representatives (M. Wertheimer, W. Koehler, K. Koffka, K. Levin) considered Gestalt as the unit of analysis of consciousness. Synonym for the Berlin School. G. arose as a critical reaction to associationism and structural psychology. Consciousness in G. was viewed as a dynamic whole of a field type, each point of which interacts with all the others (like electromagnetic and gravitational fields). As the physical world consists of holistic structures, so in consciousness we find organized entire gestalts (which were first studied in the processes of perception, later G. extended this concept to other cognitive processes, behavior, social and psychological phenomena). A number of factors have been identified that contribute to perceptual organization (for example, closeness, similarity, good continuation, common destiny).

 **2.3 Observation**

 **2.4. Experiment**

**EXPERIMENT** (translated from Latin Ехperіmentum - test, experience) - conducting research in conditions of a pre-planned (in particular, specially created) change in reality in order to obtain results that can be generalized; in psychology, one of the main, along with observation, methods of scientific knowledge in general and psychological research in particular. It differs from observation primarily that it involves a special organization of the research situation, active intervention in the situation of the researcher, systematically manipulating one or more variables (factors) and registering concomitant changes in the behavior of the studied object. To conduct an experiment, to experiment, means to study the influence of the independent variable on one or more dependent variables with strict control of the controlled variables. This allows for relatively complete control of the variables. If during observation it is often even impossible to foresee changes, then in the experiment it is possible to plan these changes and prevent the occurrence of surprises.

 The ability to manipulate variables is one of the important advantages of the experimenter over the observer.

The main advantage of the experiment is that it is possible to specifically trigger some kind of mental process, to trace the dependence of a mental phenomenon on changing external conditions. This advantage explains the wide application of the experiment in psychology.

Most of the empirical facts are obtained experimentally. However, the experiment is not applicable to every research problem. Thus, experimental study of character and complex abilities is difficult. The disadvantages of an experiment turn out to be the other side of its advantages. It is extremely difficult to organize the experiment so that the subject does not know that he is a subject. If this fails, then the subject`s stiffness, conscious or unconscious anxiety, fear of assessment, etc. are more than likely.

 There are such types of experiment as laboratory experiment, natural experiment and field experiment. On a different basis, there is a distinction between a stating experiment and a formative experiment. The distinction between the latter is especially important for developmental and educational psychology: the development of the psyche can be approached either as a phenomenon relatively independent of education and upbringing, then the task is to establish the connections that develop in the course of development; or as a phenomenon led by education and upbringing, then the learning process itself cannot be ignored. As an integral part of the experiment, observations and psychodiagnostics can be included. Naturally, during the experiment, the subject is observed and his condition is recorded, if necessary, by means of psychodiagnostics; but here observation and psychodiagnostics do not act as a research method. A correctly designed experiment allows to test hypotheses about cause-and-effect relationships, not limited to stating the relationship by correlation between variables. The plans for the experiment are divided: 1) traditional - when only one independent variable changes; 2) factorial - when several independent variables change; its advantage is the ability to assess the interaction of factors changing the nature of the influence of one of the variables, depending on the value of the other; the dispersive analysis is used for statistical processing of the experimental results.

If the area under study is relatively unknown and there is no system of hypotheses, then we speak of a pilot experiment, the results of which can help clarify the direction of further analysis. When there are two competing hypotheses and the experiment allows to choose one of them, one speaks of a decisive experiment.

**ASSOCIATIVE EXPERIMENT** - the method and projective test developed by Jung and focused on fixation, diagnosis and psychotherapy of latent affective complexes and other mental phenomena. It is based on the study of the content, forms and speed of the client`s reaction, presenting the first word that comes to mind in response to the analyst`s words.

 Initially, it was developed for the tasks of psychiatry, later it was used for research and psychodiagnostic purposes. The test requires the subject to respond quickly to the presented word with the first word that comes to mind. The inhibition of this reaction, misunderstanding of the stimulus word, its mechanical repetition, the general behavior of the subject (unmotivated laughter, complaints, redness, etc.) are considered as an indication of the presence of emotionally colored representations, which are undesirable for the subject. The specific nature of the complex itself can be established when interpreting the content of the answers; this purpose is served, for example, by preliminary grouping of the symptomatic reactions and the expansion of their content with the help of free associations.

The associative experiment is often used as a group test. To carry it out, it is necessary to find out the nature of the usual, most frequent answers to each word of the list; conduct an experiment on a fairly representative sample of subjects speaking the same language. In addition to individual words, numbers, meaningless syllables, unfamiliar words, pictures, colored spots, sounds, etc. can be used as stimuli.

**NATURAL EXPERIMENT**- an intermediate laboratory research method between observation and experiment, in which the psychologist can actively influence the situation, but in forms that do not violate its naturalness for the subject.

**PERFECT EXPERIMENT** - an experiment assuming the experimenter to change only the independent variable, the dependent variable is controlled.

**STATE EXPERIMENT** - the development of the psyche can be approached as a phenomenon relatively independent of learning and upbringing - then the task of the experiment is to state the connections that develop in the course of development.

**CONTROL EXPERIMENT**- carried out in order to check any dependencies. The application of the experiment encounters fundamental limitations associated with the impossibility in some cases to arbitrarily change the variables. So, in differential psychology and personality psychology, empirical dependencies for the most part have the status of correlations and often do not allow conclusions about cause-and-effect relationships. One of the difficulties of applying the experiment in psychology is that the researcher is usually involved in a situation of communication with the examined person (test subject) and can unwittingly influence his behavior.

**EXPERIMENT CRITICAL** - an experiment conducted in order to simultaneously test all possible hypotheses.

**LABORATORY EXPERIMENT**- a kind of experiment carried out in specially equipped laboratories, which provides especially strict control of independent and dependent variables. Due to this, the experimental results are distinguished by a relatively high degree of reliability and validity. The disadvantages of a laboratory experiment are sometimes referred to as a low degree of environmental validity - compliance with real life situations and an explicit research environment for the subject, due to which his stiffness, conscious or unconscious anxiety, fear of assessment, etc. are almost inevitable. The advantage of the method is the possibility of relatively complete control of variables.

**FIELD EXPERIMENT** - involves the use of a minimum of equipment in a situation close to natural.

**PROJECT EXPERIMENT** - formal principles of construction (projectivity): “deaf” instruction, lack of evaluation by the experimenter, emphasis on the motivational aspect of the activity. A calm, friendly atmosphere is very important

In projective research, the most common life situations are modeled - in a generalized schematic form. But precisely they are not reality for the subject, he has greater freedom of behavior in them than in life; This means that in such situations, not only habitual stereotypes of response are manifested, not only needs and motives that appear every day, but also remain non-realized. In life, their realization is hampered by a number of obstacles. Moreover, it can be assumed that it is the obstacle in activity that prompts a person to assess the vital significance of obstacle circumstances and actions in these circumstances. This process is recreated in research - in a projective experiment, although in imaginary situations it may not be completely identical to the process of conceptualization in real life. It often manifests itself in a distorted form, when the activity of finding meaning is replaced by the activity of disguising it.

**REAL EXPERIMENT**- an experiment in which not only the variables of interest to the researcher change, but also a number of other conditions.

**FORMING EXPERIMENT** - the method of tracing changes in the child`s psyche used in development and educational psychology during the active influence of the researcher on the examined person (synonyms: transforming, creative, educating, teaching, genetic modeling experiment).

It involves the identification of patterns of development in the course of an active, purposeful influence of the experimenter on the subject - in the course of the formation of his psyche. Based on an approach to the development of the psyche as a phenomenon, led by training and education; from this it follows that the learning process itself, which determines this development, cannot be ignored. The forming experiment allows not to be limited to the registration of revealed facts, but through the creation of special situations to reveal the patterns, mechanisms, dynamics, tendencies of mental development and the formation of the personality, determining the possibilities of optimizing this process. That is why it is widely used in psychology in the study of conditions, principles, ways of personality formation.

**EXPERIMENTAL GROUP**- in relation to the experiment, subjects, in relation to which some special influence is carried out by introducing an independent variable.

**EXPERIMENTAL PSYCHOLOGY**- is a designation of differential types of research of psycho-phenomena with a focus on experimental methods. The approbation of experiments played a basal psychological role in the transformation of psychological theses-postulates, and the first studies, scientific interpretations related to experimental psychology, which were put forward by Wundt, and later Thorndike, Ketell and others, made it possible to give an impetus to the creation of experimental psychological and psychotherapeutic institutions, clinics.

In experimental psychology, various techniques and methods of experimental genetic methods are involved. Leontyev and Vygotsky were the first to use such techniques in the study of the formation of higher forms-matrices of attention and memory. The essence of this method was the development of artificial experimental conditions that contribute to the reproduction of the very process of the emergence of higher forms of mental functions. Thanks to experimental teaching methods, it is possible to study in detail the evolutionary genesis of perception, memory, mental acts, and other mental processes with orientation.

All experiments, as a maximum, should meet certain specific requirements, in correlation with the ontological-existential needs-goals of the tested subjects with the fixation-definition of data registers and results, for example, associated with the posterior assimilation of one or another information and material.

At the present time, the methods-modes of experimental psychology allow expanding the scope of their research tasks in the countries of the West, the USA, Russia, and in additive-convergence with laboratory and experimental methods, introspection methods, methods-modes of neurophysiology, psychophysiology, sociology, biology, psychoanalysis, psychotherapy reproduced and created original modes, concepts, monographs, methods of experimental psychology.

**EXPERIMENTAL METHOD** - research strategy, during which the experimenter manipulates one or more independent variables under close control, and also observes how these manipulations affect another (dependent) variable.

 **2. 5. Questionnaire. Survey. Interview**

**Questionnaire** (self- administered questionnaire; French enquete -investigation) - a questionnaire survey tool, including: a) an indication of the organization conducting the survey and its purpose; b) instructions for filling Q.; c) the wording of the questions and (often, but not necessarily) the possible answers, from which the respondent should choose the most appropriate; d) in the introductory or concluding part Q., questions are asked about the demographic characteristics of the respondent. Q. is usually presented in the form of text printed on paper, which is filled by hand. However, Questionnaire is often used and compiled in electronic form. Synonym questionnaire survey, questionnaire interview, questionnaire poll.

**INTERVIEW** (interview survey) - a more or less planned and structured conversation between a researcher (interviewer) and a subject (respondent), usually in a one-on-one situation, in order to obtain one or another scientific information (for example, for personality research, for a survey about opinions, attitudes, etc.). Since the late 1970s and early 1980s. **semi-structured research I**., represented by many methodological options (for example, narrative I., centered on the problems of I., etc.) and which is put forward as an irreplaceable empirical approach for a deep description and understanding of the life world of another person, has received significant development and methodological understanding. The recognition of the importance of this mainly qualitative (in the sense of “non-quantitative”) approach is closely linked with the development of the anti-positivist methodology of humanitarian knowledge, which arose on the basis of *postmodernism*. See also *Transcription.*

S**URVEY**- a data collection method in which respondents answer a series of questions or comment on a set of statements about a given topic. Survey is carried out either in the form of a personal conversation or through some materials and technical means: *survey, questionnaire* sent by mail, computer, telephone, etc. See also *internet survey, written survey and mail survey*.\

**Q-DATA** (from Questionnaire) - according to the classification of R. Kettell, these are personal data obtained using questionnaires. Later this category was divided between L-data and S-data.

**S-DATA** (from Self-report) - self-reporting data: information that a person (examined) gives about himself, including through self-reporting questionnaires. In part, this category coincides with the concept of “Q-data”, which was introduced by R. Kettell. See Self-Assessment Methodology.

**SURVEY** (survey, survey research) - one of the two main types of survey methods (the second is interview), used to obtain information regarding objective or subjective facts (knowledge, opinions, assessments, behavior). Research with the help of survey often covers a large number of people and is carried out using questionnaires.

**ANONYMOUS SURVEY FORMS** - questionnaires and surveys in which respondents are not asked to provide their surnames and names, initials or other potential identifiers (for example, date of birth and home address), which guarantees complete confidentiality of the survey and a greater degree of openness on the part of respondents. In a personal interview, anonymity is guaranteed by the fact that the interviewer, in the presence of the respondent, seals the questionnaire in an unmarked envelope and randomly places it in a pile of similar envelopes.

**SOCIAL DESIRABILITY BIAS**- when conducting self-evaluating surveys (see Self- Assessment Methodology) - distortion of the answer due to the respondent`s desire to make the best impression based on the ideas about social services, such desirability (approval) / undesirability (disapproval) of certain traits and actions. Synonym is facade effect. Social desire bias try to control with the help of additional scales of questionnaires, which are called scales of social desirability or scales of lies.

**NON-RESPONSE BIAS** - bias (distortion) of the survey results due to the fact that the persons who returned the questionnaires have noticeable differences in terms of characteristics that are significant for the study from those who declined to participate in the survey.

**BIPOLAR QUESTIONS** - questions that suggest an answer on a bipolar scale, which has a positive and negative pole. In the simplest case, the answer to B. Q. comes down to choosing one of two or three alternatives (for example, “Approve / condemn” or, more correctly, “satisfied / indifferent / not satisfied”). Correctly stated bipolar questions allow to fix the intensity of the attitudes in the range from positive to negative values ​​with a neutral mean. Compare *unipolar issues*.

**RECALL QUESTION** - a question requiring recollection of past events, the witness and / or participant of which was the respondent. See *Memory Errors, Telescopic Effect*.

**A FORCED CHOICE QUESTION** - the type of question, when answering which the respondent is asked to select one of the options that is closest to his/her point of view, even if none of the options offered and it does not fully reflect his/her opinion.

**MULTIPLE CHOICE QUESTION**- see *Closed Question, Multiple Alternative Question*.

**QUESTIONNAIRE** - see *Questionnaire, Survey.*

**KNOWLEDGE QUESTIONS** - questions to find out the respondent's awareness of current problems, people or events, as well as questions to assess the level of education and intellectual development.

**ATTITUDE QUESTIONS** - questions that clarify the attitude of the respondent to certain problems or objects.

**THREATENING QUESTIONS** - questions that some respondents are afraid to answer truthfully (for example, “are you cheating on your husband / wife?”; “Are you a member of the Communist Party?” ‚“Have you used drugs in the last month? ”). Such questions relate to socially approved and discouraged forms of behavior; besides, respondents are afraid to answer questions about their financial situation, sexual behavior and health status. Usually such topics are not discussed with other people. Synonym is sensitive topics, questions. To obtain the population frequencies of events, which are discussed in such questions, various variants of *random response method* have been proposed. *See also Neutral Questions, Projective Questions*.

**SURVEY RESEARCH GROUP ORGANIZATION** - simultaneous survey of a group of respondents using multiple copies of the *questionnaire.*

**DEMOGRAPHIC CHARACTERISTICS** - the main classifying variables: gender, age, marital status, race, ethnicity, ethnic identity, educational level, profession, income, religion and place of residence. See *Questionnaire, Variables.*

**DYCHOTOMIC QUESTION***- see Closed Question.*

**CLOSED QUESTION** - a type of question often used in surveys and tests, in which the respondent has to choose one or more answer options from a directly attached or implied list of different answers.

In the simplest case of a dichotomous question, the respondent makes choice from two options (for example, “yes” or “no”, “man” or “woman”). Multiple choice questions (see also *multiple alternative question*) have more than two choices: for example, “strongly agree”, “agree”, “disagree”, “strongly disagree”; an extreme case is a question to which a graphic scale is attached, on which the respondent must mark the answer with a dot (mark). A special case of multiple choice questions are menu questions in which the respondent has the right to choose more than one answer option.

**INTERNET SURVEY**- a survey conducted using the worldwide computer network. *See also Online Research.*

**INFORMANTS**- respondents who provide information about other people who they knew and about the events they took part in or witnessed. *See also Key Informants.*

**INFORMED CONSENT**- an ethical norm requiring potential subjects (in the case of young children, their parents) to be provided with sufficient complete information about the study and to receive written confirmation from them on a standard form that a person agrees to participate in the study voluntarily and with the knowledge that in the study should happen. In survey research, this rule is less stringent, as the respondent is not required to give written consent, but the researcher must inform the respondent about the purpose of the research, his name, the name of the organization he represents, the approximate time required to fill out the questionnaire or conduct an interview; besides, it is reported that the respondent has the right not to answer “sensitive” questions (see *Threatening Questions*). Synonym is *voluntary informed consent.*

**DISTORTION**- *see Bias.*

**KEY INFORMANTS** - informants who provide information about the organization, which they are a member and about the activities that they are involved, due to their role function (for example, it can be a coach of a sport team, a principal, a tribal leader, etc.).

**CODING** - the choice of a method for converting the answers of the questionnaire into a symbolic (in particular, numerical) form for input into a computer and subsequent statistical processing. The coding of answers to *closed questions* is often done at the stage of designing the questionnaire (pre-coding).

**LATENT TRAITS** - 1) genetic traits that are not manifested in the phenotype of an individual, but can be passed on to future generations; 2) personality traits that appear only in exceptional life situations; neither the owner himself nor those around him for a long time know about them; it is possible that these are the traits that were suppressed by upbringing; 3) factors extracted by using methods such as factor analysis, or theoretical constructs, indirectly measured using the appropriate scales of questionnaires.

**PERSONAL QUESTIONNAIRE** - a questionnaire used as a self-evaluating technique or for assessing the personality traits of other people (individually or stereotypically), consisting of a set of statements or questions about the characteristics of personality and behavior that a person decides about, they refer to the target object. Standardized P. Q., with the help of the degree of expression of personality traits of respondents or third parties is unequivocally and quantitatively assessed, are often referred to the category of tests. See also *Projective test, Test, Scale of lies*.

**PERSONAL INTERVIEWS** - interviews in which the interviewer asks questions, receives and records answers in real time. From this point of view, telephone interviews can be considered a special case of P. I., while group interviews and questionnaires, in which the respondent fills out the questionnaire himself. Although they are carried out in the presence of the interviewer, they do not apply to P. I.

**“FOCUS GROUP” METHOD** is depth-focused interview in the form of a series of group discussions, during which the participants are “focused” on the issues of interest to the researcher in order to obtain subjective information from them. Synonym is focused interview, group in-depth interview. The method was developed by the American sociologists R. Merton and R. Kendall (1944). Soon it began to be actively used not only in sociological, but also in psychological and economic research, being an integral part of marketing, advertising and political research.

**INTERVIEW METHOD** - *See Interview, Focus Group Method.*

**RANDOMIZED ANSWER METHOD** - a class of survey techniques designed to obtain more accurate population proportions of various behaviors or attitudes, which are discussed in the questions of concern to the respondents. Randomized answer method guarantees the respondent the anonymity of the answers to these questions. The first option of RAM suggested by the economist Art. Warner (1965). For example, a respondent is asked two questions, one of which is sensitive, i.e., causing concern, and the second is neutral. Warner himself considered the option in which the respondent is offered opposite statements (for example, “You are a spy” and “You are not a spy”) and one of them must be admitted to be true or false. There are two possible answers to each question (statement): “yes” or “no”. Using a special randomization procedure (a kind of lot with a biased probability of outcomes, for example, 0.7 and 0.3), the respondent decides which of the questions he should answer. An important requirement of the methodology is that the interviewer does not know which of the two questions the respondent answers. Another variation of this method asks one question, but the randomization device dictates whether the respondent should answer truthfully or falsely.

**MULTI-ALTERNATIVE QUESTION** - a closed-ended question which the respondent (subject) is asked to choose one of three or more answer options. Questions that allow the simultaneous selection of two or more answers are called “questions-menu”.

**SUGGESTIVE QUESTIONS** - questions specially or negligently formulated in such a way that they suggest certain answers to the respondent. For example, it is believed that a question that begins with the words: “You agree that ...” is suggestive because it provokes the respondent`s consent. As I. Levin showed (1987), respondents in one group gave more negative characteristics of beef, which they described as having 25% “fat content,” compared to respondents in the other group, who rated beef as 75% lean. S. Q. can be specifically used to overcome the respondent`s difficulty in answering questions of concern. However, often suggestive questions are used for the purpose of manipulative pressure on respondents in order to obtain the desired indicators of public opinion.

**FILLER ITEMS** (buffer items) - questions (points) in surveys (questionnaires) to disguise the true purpose of the survey (especially in surveys for prejudice). For example, a researcher wants to get answers to seven questions about attitudes towards homosexuality, and the questionnaire may include 43 filler questions on other topics (for example, attitudes towards waste disposal).

**I DON`T KNOW**- one of the answer options that provides the respondent with the opportunity to refuse to choose meaningful answer alternatives. Similar options: “I can’t say for sure”, “I don’t remember”, “no idea”, “no answer”, “no decision”. Sometimes some of them are combined in one answer, but in some cases, it is useful to consider them separately (if, of course, there is a guarantee that respondents unambiguously distinguish and interpret the semantic features of these options).

**NON-VERBAL QUESTIONS** - questions (questionnaire items) using non-verbal means (for example, drawings, photographs, maps, musical fragments or physical objects) that complement the forming the question or the options offered to the respondent.

**NEUTRAL QUESTIONS** - 1) questions that do not contain hints for the answer and do not affect the main topic of the survey; 2) (unrelated non-sensitive questions) - questions that do not cause concern for the respondent (*compare with questions that cause concern*).

**UNIPOLAR QUESTIONS** - questions that suggest an answer on a unipolar scale with only a positive or negative pole. In the simplest case, the answer to unipolar questions comes down to choosing one of two alternatives (for example, “Do you approve of X or not?”; “Are you excited or calm?”). U.Q. allows fixing a change in attitude from positive to neutral or from negative to neutral, but a positive assessment is not necessarily opposed to a negative one. Compare *bipolar questions.*

**ONLINE RESEARCH** - a modern type of research, the collection of information (testing, survey) is carried out using the global Internet.

**PHONE SURVEY** - a survey method that the researcher asks questions and receives answers over the phone. See also *Automated Telephone Interviewing System.*

**QUESTIONNAIRE** - a research tool, answers received to many written questions from the examined (subjects); application procedure of questionnaire can be individual or group. Traditionally, the questionnaire is printed on a paper, but with the advent and widespread use of computers, they are entered into computers and presented in electronic form. In psychology, standardized questionnaire is evaluated with the help of expression degree of personality traits (or other psychological features) of respondents or third parties, are often called tests. See also *Questionnaire, Personality Questionnaire, Structured Interview.*

**OPEN QUESTIONS** - the type of question used in questionnaires and interviews; unlike closed-ended questions, they do not offer the respondent ready- answer options; moreover, if it is not specifically stated, the respondents can formulate their answers in free form.

**MEMORY ERRORS** - involuntary mistakes of respondents when they answer questions about past events, caused by the fact that the respondents forget about the fact or remember it inaccurately, with distortions. See *Question of* the *Past, Telescopic Effect.*

**PANEL STUDY** - longitudinal survey research, consisting of several repeated surveys on the same sample using interviews, questionnaires or filling out diaries (see *Diaries*). Panel study allows tracking individual changes and getting more detailed information than with conventional single surveys.

**TRANSITIONAL PHRASES OR QUESTIONS** - phrases or questions (in interviews, questionnaires) that inform the respondent about the change in topic, making it easier to understand the subsequent questions.

**WRITTEN SURVEY** - a survey method that the researcher forms a questionnaire (see also Questionnaire), which is then completed in written form by the participants in the experiment.

**SEMI-STRUCTURED INTERVIEW** - a method of conducting an interview that the interviewer has a fairly, clearly established set of questions that should be discussed and on which information should be obtained, but their sequence and verbal design are not strictly predetermined. See Structured Interview.

**MAIL SURVEY**- a survey conducted by mailing questions.

**RIGHT TO WITHDRAW** - the norm of research ethics composed of informing the examined (respondent) about the right to refuse research (survey, experiment) at any time without explaining the reasons.

**PROJECTIVE QUESTIONS**- the form of questions in interviews or questionnaires, which at first glance relate to the opinions and attitudes of other people, but it is assumed that the answers (especially on sensitive topics) express the respondent point of view. Such questions need to overcome barriers in answering questions of concern.

**FUNNELING PROCEDURE** - such a sequence of questions (in a survey study), in which general questions are asked first, and then particular ones. It is assumed that the majority of respondents have their own opinion on the general questions; otherwise, it should apply the reverse procedure - extensions, i.e. start with particular questions.

**RANDOMIZED RESPONSE** - see *Randomized Response Method*.

**INTERVIEW DECODING -** see *Transcription.*

**RESPONDENT**- a person who answers questionnaire or interview. See Questionnaire survey.

**COMPUTER- ASSISSTED TELEPHONE INTERVIEWING, CATI** - the method of telephone survey using a computer: the interviewer reads the questions and answer options on the display, and immediately enters the respondent`s answers into the computer.

**RANDOM DIGIT DIALING** (random digit dialing, RDD) - formation of a sample for a telephone survey using a random dialing of telephone numbers. In this case, the first digits of the telephone number, defining the territory where the survey will be conducted, fixed, while the last four digits of the number are generated randomly.

**STYLE OF RESPONSE** - the tendency found in some subjects to answer the questions of the test (questionnaire) in a certain uniformal way, which is more connected with the form of the questions (or answers) than with their content. For example, giving answers to the first question “yes” or “not sure”, the respondent answers many other questions in the same way, especially if the formulations are difficult to understand or the questions do not arouse interest. It refers to bias (or distortions). Synonyms response set ‚response bias. See also *setting for consent.*

**STRUCTURED INTERVIEW** - an interview method (technique) in which all participants are offered (orally or in writing) the same questions in the same order, which allows one to compare, combine and compare, analyze the answers. During S. I. researcher uses a specially prepared questionnaire, which the questions forms and their sequence (structured questionnaire) are unambiguously defined, while in the unstructured and semi-structured interviews, only a list of topics is used that the interviewer must discuss with the respondents, vary the forming and sequence of questions at its discretion (unstructured questionnaire).

**TELEPHONE SURVEY** - survey conducted through telephone *interviews*.

**TRANSCRIPTION** – decode (decoding) the interview text from the oral form, recorded using a dictaphone or VCR, into the form of a written text. Synonym is decoding. The term “T” and some of its synonyms are often used ambiguously, so they mean both as the process and as the result of its transition. The term “transcription” unambiguously indicates the process of transcribing, which is also used in the characterization of this stage of the research using the interview method.

**RESPONSE SET** - see Response style.

**CONSENT SET**- one of the response styles, which is characterized by the tendency of respondents to give affirmative (positive) answers to the questions of the questionnaire (test), regardless of their content; the opposite effect is also possible - preference for negative answers ("no", "disagree", etc.). The respondents who abuse the answers like “yes”, “like” and “agree” are called “yes”, in the opposite case - “negativists”.

**SETTING ON SOCIAL DESIRE** (social desirability response set) - the propensity (bias) to give socially approved answers to interview questions or questionnaires.

**FILTER QUESTION** - an auxiliary question in an interview or questionnaire that determines which basic questions (of interest to the researcher) are appropriate to ask respondent. For example, if the researcher is interested in what the respondents like to talk with their children about, then first it is necessary to find out whether they have children and what age they are.

**FOCUS GROUP** - a small and relatively homogeneous group of people for a group discussion on a certain topic (the situation on the market, social assistance, reasons for losing the election). Members of F.G. are selected according to certain criteria (for example, demographic) relevant research objectives, but they are not representatives of a narrow circle of specialists and should represent the reactions of the general population.

**EMPIRICAL QUESTION** - a question, the answer to which can be obtained using methods of observation or experiment (empirical research).

 **2.6. TESTING**

**TEST** - a standardized method of psychological measurement and diagnosis of the mental and behavioral peculiarities or personality; sometimes the applied nature of the test methods and the simplified nature of the procedure are emphasized (which, of course, is not a general rule). They are classified for various reasons, in particular: according to the characteristics of the tasks and the way answer, they distinguish between verbal and practical T. (even in the 1920s, a similar division into verbal and dumb T. was used); by the object of measuring T. abilities (for example, T. intelligence, T. creativity, T. special abilities), T. achievements, personal T. (including personal questionnaires), tests of mental characteristics; materials and equipment, blank (T. “pencil-paper”) and hardware (instrumental), including computer; according to the method of processing the received data, registration (formalized counting of answers) and interpretation (which is typical for projective methods); according to the situation of individual application including self-applied, and group T.; in composition monometric and complex (test batteries). The term “mental T”. (Mental test) proposed by J. Castell (1890).

**T-TEST**- statistical test to test the significance of differences between the means of two samples. Synonym is t- criteria, student criteria. See checking student criteria for dependent groups. Checking student criterion for independent groups.

**TEST BATTERY**- test, which is a set of subtests, the indicators that can be combined for a general assessment of individual or group characteristics.

**VALIDATION** – 1) psychometric research aimed at determining the validity of a test or other measuring instruments; 2) verification of available information by obtaining more accurate information (obtained by other and more accurate methods). Synonym for *Verification.*

**TEST VALIDITY** - any of the psychometric characteristics that indicate the accuracy, which the test measures are intended to measure; the smaller the systematic measurement error, the higher the test validity. *Discriminant validity, Convergent validity, Competitive validity, Construct validity, Criterion validity, Cross-validation, Obvious validity, Predictive validity, Content validity.*

**INTERNAL CONSISTENCY** - the type of test reliability - the homogeneity of the set of test items, that is, the degree to which specific items (for example, a questionnaire) evaluate the same construct, to what extent they measure the same variable. Sometimes the English tracing paper consistency is used synonymously. One of the types of internal consistency assessment is the *Split Reliability*. See also *Alpha Coefficient*.

**DISCRIMINANT VALIDITY** - an assessment of validity that is complementary to convergent validity and both types of validity are special cases of construct validity. If there are theoretical ideas about other means (constructs) and not related to the features measured by this test, then high significant correlations of the latter with tests for related constructs (convergent validity) and low insignificant correlations with tests for unrelated constructs (discriminant validity), increase confidence in the construct validity of this test. Thus, D. V. there is a degree of statistical independence of a given test with other tests (factors, variables), according to theoretical concepts, it should not be associated.

**FINAL TESTING** - a measurement (and test is not necessary), carried out at the final stage of the study, after the members of the experimental group have been exposed to the experimental influence. Synonym is posttest. The results are compared with the *pretest* results.

**HISTORY** - the symbolic name of one of the factors that threaten the internal validity of a study with preliminary and final testing: relates to the fact that in the interval between pretest and posttest, in addition to the experimental impact on the participants, some historical events can influence. For example, the attitude towards terrorism changes dramatically after another terrorist attack.

**CONVERGENT VALIDITY** - assessment of validity, additional in relation to *discriminant validity*, and both types of validity are special cases of construct validity. There is a degree of statistical dependence (correlation) of a given test with other tests (factors, variables) with; it should be associated according to theoretical concepts.

**COMPETITIVE VALIDITY** - kind of criteria validity of tests that assesses how accurately the results of measuring a variable obtained using a given test correspond to the generally accepted indicator of this variable, which is measured almost simultaneously with the application of this test in a certain normative sample. For example, C. V. of new intelligence test is assessed by comparison with other authority tests; C. V. of the abbreviated personal questionnaire is assessed by comparison with the results obtained using the full form of the questionnaire. Besides, a typical case is competitive validity a test based on vital data (see b-data) obtained in real (educational, cadaveric, family, etc.) activities; in this case, a composite variable made up of a number of particular indicators is often used as a criterion. Synonym is current validity, status validity, less often diagnostic validity. Compare *Predictive validity*.

**CONSENSUAL VALIDITY** - the degree of unanimity of the respondents in support of any theoretical or practical position. This term does not refer to psychometric, but to socio-psychological concepts.

**CONSTRUCT VALIDITY** - the degree of validity of the theory underlying the creation of the test. The concept of C. V. directs attention not to the measuring instrument itself, but to the measured construct and the reputation of its theoretical interpretation, which depends on the application of both the given test and all other data relevant to the given theory. See also *Convergent Validity and Discriminant Validity*.

**PLACEBO CONTROL GROUP**- the same as the *Placebo group*.

**ALPHA COEFFICIENT**- coefficient for assessing the reliability and internal consistency; suitable for tests composed of dichotomous or multiple-choice questions (points); is defined as the animate correlation of one test with its parallel form containing the same number of questions. Synonym for Cronbach alpha coefficient.

**VALIDITY COEFFICIENT**- the correlation between a test score and some criterion that the test is supposed to predict. V.C. is used to assess “current validity as well as *predictive validity*.

**DETERMINATION COEFFICIENT** - for two correlating factors - the degree of variability of one factor caused by the variability of the second factor; calculated by squaring the *Pearson correlation coefficient*.

**CONCORDANCE RATIO** - the percentage of cases in which a given symptom (for example, a diagnosis of schizophrenia) is present in either members of twins; or, more precisely that the other member of the couple has it if one of the twins has it.

**CORRELATION COEFFICIENT**- a normalized quantitative indicator, varying from -1, 00 to + 1, 00 and assessing the strength and direction of the relationship between two variables. The lack of communication is expressed in values ​​close to zero. However, what value of С. С. is considered essential (significant, not random), depends not only on the absolute value of C. C., but also on the sample size. With a small sample, even C. C. equals to 0.7 may turn out to be insignificant, and with a large sample, C. C. may be statistically significant equals to 0.2. See examples: *Pearson correlation coefficient and Spearman rank correlation coefficient*.

**CRITERION VALIDITY** (criterion- related validity) - one of the forms of test validity, which is assessed by the correlation of test indicators with certain external criteria of the measured attribute (for example, school grades serve as an external criterion for BAP assessments). Synonym: empirical validity. C. V. can be presented in the form of *Competitive Validity and Predictive Validity*. See also Criterion, Criterion Problem.

**CRITERION VARIABLE**- see *Multiple Linear Regression*.

**CRITERION** -1) a reference variable, with the help of it the criterion validity of the test is assessed (as a rule, it is assumed that the purpose of the test is to accurately predict the reference variable); 2) a rule set in advance for making a decision on the unsuccessful and successful completion of the experiment: for example, the experiment can stop in the case of two consecutive incorrect solutions to the problem or in the absence of a solution to the problem within 10 minutes; similarly, in experiments with learning, one or another criterion learning is established, for example, a certain number of successive passes of the labyrinth without errors serves as an indicator that the labyrinth has been mastered; 3) criterion statistical hypothesis is a rule for accepting or rejecting a hypothesis based on the characteristics of the sample (see Hypothesis Testing), for example, testing by Student test (see t-test), Wilcoxon test, chi-square test, etc.; often the term “criterion” is also used in relation to statisticians that apply in similar rules.

**CROSSVALIDATION** - the procedure for additional verification of the validity of the test or the results of the study by applying the test on a new sample or conducting a study with other groups of subjects, as well as using other methods for registering dependent variables.

**INTER-EXPERT RELIABILITY** (interobserver reliability) - the degree of consistency in the assessments of two (or more) experts (judges, observers, assessors), who are simultaneously perceiving, assessing and interpreting some behavior (for example, the consistency of their assessments of children aggressiveness), the same objects, tests, texts and other information sources. Synonym for inter-expert consent. See also *Interobserver Reliability, Reliability*.

**INTER-EXPERT CONSENT**- the same as *Inter-expert reliability*.

**RELIABILITY** - the degree that the measuring instrument (method) shows consistent (stable, similar) results: 1) between different points in time, if the measured value is constant (see Retest reliability); 2) between different observers (experts) (see Inter-observer reliability, Inter-expert reliability); 3) between equivalent (parallel) forms of tests (see Reliability of Parallel Forms). Reliability characterizes the productivity of measurements and the magnitude of random errors. Reliability test, as a rule, is assessed using the correlation coefficient between two sets of test indicators, the sample size should be at least 200 subjects (the level of some domestic reliability studies is evidenced by the following fact: the famous psychologist assessed the retest reliability of the questionnaire of the nervous system, proposed by Y. Y. Kisseleyev, on two subjects, one of whom was himself). See also Internal Consistency, Split-Defined Reliability. Into dimension.

**RELIABILITY OF INTERNAL CONSISTENCY**- see *internal consistency*.

**RELIABILITY OF PARALLEL FORMS** (alternative-form reliability) - one of the forms of test reliability (measuring techniques), which characterizes the degree of consistency in the results of using two or more versions of a certain test on the same group of subjects; estimated using the correlation coefficient. Synonym for reliability of equivalent (interchangeable) forms.

**RELIABILITY OF REPEATED TESTING** - the same as *retest reliability*.

**SPLIT-HALF RELIABILITY** - a way to determine the reliability of a test (the so-called internal consistency) by splitting one test (after its application) into two parts and calculating the correlation between them. A simple way of splitting is to divide the test into groups of tasks (questions) with odd and even numbers. Synonym for unstable reliability, reliability of test parts. In the translated literature, there are error ways of translating this term and derived terms. For example, in the book “Labyrinths of Loneliness” (translated from English, 1989), translators coined the expressions “split-half reliability” and “split-half coefficient”.

**REGULATORY GROUP**- a group of subjects, the results of which fulfillment of a certain test serve as a standard (test norms) allowing to interpret the test data of other subjects.

**BLINDING**- hiding from the subjects (respondents) and / or persons conducting testing (observation, processing of primary data) information that can provoke the occurrence of certain bias and serve as required characteristics, for example, information about goals and hypotheses, as well as about the distribution of subjects according to conditions. To emphasize the metaphorical nature of a term, it is often used in quotation marks.

**APPARENT VALIDITY** (face validity) - attitude to the test on the part of the subjects, the administration, the public, its perceived value. For example, intelligence tests originally developed for children were found to have low apparent validity when they were used to professionally select adults.

**PLAN WITH NON-EQUIVALENT GROUPS AND ONLY FINAL TESTING** (posttest-only design with nonequivalent groups)- pre-experimental design with two groups of subjects, in which one group of subjects is exposed to one level of the *independent variable*, and the second group, matched by using a different selection mechanism (no randomization), is exposed to a second level (possibly zero).

**SINGLE-GROUP POST-TEST PLAN** (one-group posttest design) - *a pre-experimental plan*, in which there is only one group that is exposed to the experimental treatment and is tested only once after the exposure.

**SINGLE- GROUP PRE-TEST AND POST-TEST PLAN**- pre-experimental plan with one group and testing before and after exposure; has highly questionable internal validity. Unfortunately, many domestic studies conducted by the method of the Formative (or teaching) experiment used this particular plan. See also Pre-Testing, Final Testing.

**MATCHED GROUP PLAN (DESIGN)** - an intergroup plan with two (or more) groups, which are composed so that each member of one group corresponds to a subject from another group with similar significant characteristics.

At the same time, subjects who are healthy (ideally equivalent) with attitudes to the set of variables influencing the research results are randomly distributed into groups.

**PLACEBO** (from Latin placere - like) - a drug that is indifferent to the body, imitating in appearance (smell, taste) of any medical substance and used in one of the groups (placebo group and placebo condition) to control the suggestion factor in a clinical study of the new drug effect. The terms “Placebo” and the “placebo effect” have long gone beyond the context of pharmacological tests. By analogy, they can be applied to many psychotherapeutic and socio-psychological effects, which are due to people's belief (and the corresponding suggestion) in the positive action of any factors.

**PLACEBO GROUP**- the type of control group that participates in the placebo condition, i.e., subjects who are confident that they are made to the experimental influence on the absence of some factor. Synonyms placebo group, placebo control group.

**PLACEBO CONDITION**- a control condition (in study), the introduction of an independent variable is simulated (the subjects are given the impression and confidence in the existence of the experimental effect), but the studied level of the independent variable is absent (placebo), for example, the subjects are given cocktail without alcohol (or coffee without caffeine), the effect of alcohol (or caffeine) on the behavior and well-being of subjects is investigated. We can say that P. C. is a condition with an imaginary factor. See Placebo Effect.

**PLACEBO EFFECT** - the occurrence in a placebo condition (i.e., in a condition with an imaginary factor P) changes in the dependent variable, similar to those that were originally caused by the real effect of factor P. For example, if the subjects are already familiar with the effects of morphine injection, then sometimes similar results can be caused by a procedure in which morphine is replaced with a neutral substance (although the subject is sure that morphine is used) placebo. Placebo effect shows changes (not only during chemotherapy) caused by expectations, attitudes, conditioned reflex connections.

**PRETEST**- measurement (it isn`t obligatory to use tests), carried out at the beginning of the study, before members of the experimental group were subjected to experimental influence. Synonym for pretest, stating series. See also Single Group Pre-Test and Post-Test Plan, Post-Test.

**CRITERION PROBLEM**- a very typical psychometric problem associated with the difficulties of finding a generally accepted reference criterion with which one could assess the *criterion validity* of a test.

**T-TEST INDEPENDENT GROUPS** -testing the hypothesis about the significance of the differences in the mean values ​​of two independent samples using a parametric t-test.

**PREDICTIVE VALIDITY**- a kind of criterion validity, which assesses how successfully the test predicts characteristic criteria of the future (educational, work, etc.) activities of the subjects.

**PROJECTIVE METHODS**- tests in which the subject is presented with materials that allow for a wide variety of interpretations (unclear, ambiguous stimuli); it is assumed that responses to such ambiguous stimuli reveal the personality traits of the respondent that are important for the psychodynamic assessment. Synonym for projective test.

**PROJECTIVE TEST** – see *Projective methods*.

**TEST PROFILE** - presentation of indicators for a number of subtests (subscales) or generally dissimilar indicators for the same individual (or a group of individuals) on a common graph. All types of indicators are ordered along the abscissa, and their numerical values ​​are plotted along the ordinate, and these values ​​are connected with a line, so that you can easily see high and low indicators.

**PSYCHOMETRIC TEST**- a carefully designed, standardized tool for quantifying psychological characteristics; usually it is a personality or intellectual scale. Synonym for psychodiagnostic test. See Test.

**PARTICIPANT POOL**- many people who agreed to participate in the test study (for example, students of University who agreed to participate in the study), from which selection is actually made to the experimental and control groups. Sometimes translated as “fund of participants (or subjects)”.

**TEST POINTS**- separate test tasks or questions in the case of questionnaires. See Content validity.

**SPLITTED RELIABILITY** (split-half reliability) - See Split Test Reliability.

**REACTIVITY** - changes in the behavior of the subjects caused by various motives that are associated with their knowledge that they are being watched, studied, and certain results are expected from them. The term “R” combines many different concepts: Bias of the subject, Bias of social desirability, required characteristics, Hawthorn effect. R. is usually viewed as one of the threats to external and internal validity. For example, children often think if they do not solve the problem, they will be considered stupid (in Rosenberg`s terms, “the effect of expectation of evaluation”); and this can especially affect the stage of the final testing (posttest), so children (especially adults) understand that they are expected the improvement in comparison with the pretest.

**REGRESSION TO THE MEAN** - the tendency of approaching extremely high or extremely low indicators to the group average value during subsequent measurement (testing); in other words, if very high or low scores are obtained during the preliminary testing, then during the final testing the scores will be closer to the mean, which may be a factor threatening internal validity.

**RETEST RELIABILITY** (test-retest reliability) - one form of test reliability (measure technique), which is determined by retesting the same group and calculating the correlation coefficient between two series of results. Synonymous with test -retest reliability.

**CONTENT VALIDITY** - one of the forms of test validity, defined as the correspondence (adequacy) of the content of each and all together test items to the measured variables. The procedure for checking and evaluating C. V. is not formalized; one of the goals is to select those items without unnecessary duplication would adequately represent different manifestations or aspects of the measured traits or abilities. Synonym for content validity.

**STANDARDIZED TEST** - the test, which, as a result of standardization, is provided with explicit requirements for its application, the observance of which by different researchers guarantees a higher level of objectivity of the information received and the ability to use the regulatory framework attached to the test.

**STATISTICAL TEST** - a statistical procedure for testing a hypothesis, which allows you to decide whether an item is statistically significant and not just a random result, for example, the difference between the means of two groups in a separate experiment.

**DEGREES OF FREEDOM** - the value required to calculate and determine the probability of the results of a statistical test (for example, 1-test) according to the table. Literally, this term defines the number of independent observations that are possible sources of variability minus the number of independent parameters that were used to calculate this variability. In variance analysis the sum of squares ($$) divided by the number S. S. ((P) is called the mean square (M3).

**BONFERRONI TEST** - the procedure for changing (correcting) the established criterion for rejecting the null hypothesis to a more realistic level, when it is required to conduct more than usual, the number of paired comparisons in an experiment with multiple groups. To perform BTest, the established probability level (for example, 0.05) is divided by the number of possible comparisons (for example, 3), and the resulting value (in this case, 0.017) is used as a criterion for rejecting the null hypothesis.

**TESTING AS THREAT TO INTERNAL VALIDITY**- change in the effect of the independent variable due to the previous exposure of the subjects to the testing procedures; in experimental designs with pre- and post- tests, pretesting may affect side variable that reduces the internal validity of the study. See Final, Post-Testing, Pre-Testing.

**EFFECT OF PLACEBO** (placebo effect) - see Placebo effect.

ORDER EFFECT - in intragroup plans, the effect of order (passing of subjects through experimental conditions) on the dependent variable (results). OE is absent while using an intergroup plan, in which each participant receives only one impact. Synonym for sequence effect. If all subjects are tested in the same order, then order becomes an additional *side variable* that threatens internal validity. In the fundamentals of order effect may be **various reasons**: for example, learning, setting, fatigue, contrast effect, practice. So, if in a study of physical attractiveness, subjects are asked to evaluate the attractiveness of three faces presented in photographs (slides, displays) to all subjects in the same order, then the assessment of the third person due to contrast can be greatly underestimated if the second was presented with an image of a face with high attractiveness. Some causes, such as fatigue, are monotonically increasing factors, that is why the term “monotonous effect” (progressive effect) is used. If it is impossible to eliminate order effect then one can try to neutralize its influence on the mean group results by making the order of the controlled variable so that different subjects receive stimuli with different orders. This procedure is called counter balancing technique. Synonym for sequence effect. See also Full counter balancing technique, Partial counter balancing technique.

 **2.7. Measurements in psychology**

**MEASUREMENTS IN PSYCHOLOGY** - procedures for obtaining numerical characteristics for properties studied in the psychology of phenomena and objects, for example, motor and speech reactions, sense of perceptions, abilities, motives, attitudes and actions of a person, her/his status in a group. Various types of measurement in theoretical terms are formalized using the concept of a scale.

**SCALE** - it is a set of numbers, the relations between which reflect the relations between the objects of the empirical system; a scale is called both the measurement results obtained by a certain system of questions posed to the subject, and the measurement tool itself (i.e., the system of questions, questionnaire, test). Scales are divided by type in accordance with what relations they reflect, and, which is equivalent, by those admissible (mathematical) transformations that leave the corresponding relations invariant. A simple typology of scales is widely known, suggested by the American psychologist S. Stevens (1946): *ratio scale, interval scale, ordinal scale and* nominal *scale*. These and many other types of scales are compatible with the broad definition of measurement “as assigning numbers to objects or events according to rules” (Stevens). See also *multidimensional scaling*.

**ANOVA** (abbreviation for *Analysis of Variance*) - ANOVA procedure with one dependent variable and one or more independent variables.

**SPSS** (stands for *Statistical Package for the Social Science*) - a statistical software package for computer analysis of empirical data in the social sciences (the 11th version appeared in 2002).

**ADDITIVITY** - a statistical assumption when using parametric statistics, which consists in the fact that the effects of (experimental) exposure and the effects of error in the experiment are additive (add up linearly).

**ADDITIVE SIGNALS** - signals, added linearly, and the resulting signal is equal to the sum of all signals acting simultaneously. Compare *Multiplicative signals*.

**TIME SERIES ANALYSIS** - statistical analysis of data obtained in the study of a single object (for example, one person or one group), in which observations or measurements of one or more variables of this object are consistently and repeatedly made. Time series analysis is a broad concept that encompasses many different mathematical methods: for example, repeated measures ANOVA, *autocorrelation, Fourier analysis.* See also *Time Series Plan*.

**SAMPLE BASE** (sample frame) - a general initial list of people (groups, organizations) from which the sample is “drawn”.

**BIAS** - 1) systematic measurement error, i.e. the same as the offset; 2) in a narrower sense, any typical tendency in the responses of the subjects (respondents, experts), distorting the results of measurement (diagnostics) of target parameters and creating artifacts (in the research results). In this sense, the term “B” has a psychological meaning, as far as we are talking about subjective sources of systematic measurement error. Examples of Bias: central tendency (preference for the middle of the rating scale, when the subjects know little about the objects being assessed), the tendency to choose more socially desirable answers, the tendency to agree (see Response Style) or to positive answers, etc. There are a large number of words which translators are trying to replace the term “Bias” (e.g. error, prejudice, offset, fault, propensity, inclination, distortion); this diversity alone can serve as an argument in favor of the preference for English tracing paper.

**CONFIRMATION BIAS**- - one of the typical mistakes, inherent in many researchers and consultants, the tendency to selectively pay attention to information that confirms pre-formed expectations, opinions, including delusions, and ignore other information that refutes these attitudes. Exactly, it is common to people, but it is the duty of professionals to deliberately strive to minimize this factor. Synonym confirming bias.

**STATISTICAL CONCLUSION VALIDITY**- the validity of the statistical conclusions carried out in the course of data analysis. (Confounding variable) - see side variable.

**SAMPLING** - 1. often refers to the process of forming a group of surveyed objects, called a *sample population*; this process is also called “selection”; 2. (Sample) the sample itself (see 1) of the observed objects (individuals); 3. sample statistical set of values ​​of the studied variable, registered in the experiment. 4. in many studies, it becomes necessary to produce other types of sampling: time sampling, event sampling; while creating materials for an experiment, they often have to choose texts, commercials, photographs.

**DESCRIPTIVE STATISTICS**- see descriptive statistics.

**DESCRIPTOR**- a keyword or phrase used for an information request in information search systems.

**DISCRETE VARIABLE**-variable that can take only those numerical values ​​that differ in clearly defined steps and can be expressed in integers (for example, 1, 2, etc.); In other words, it is not true for discrete variable ​​that there is always an intermediate value between any values. Synonym for *discontinuous variable*. Opposite *Continuous variable*.

**VARIANCE ANALYSIS** - parametric method of statistical inference used to analyze data obtained in a factorial experiment or in a one-way multilevel experiment; the method consists in dividing (analysis) into components of the total *variance* found in the experiment. By calculating the connection between these components (F-test), you can get answers to various empirical questions, for example, about the significance of differences between two or more groups in the experiment. See also ANOVA.

**VARIANCE**- is a statistical measure of the *variability* of any feature, the mean of the squares of the deviations of each value from the group mean (otherwise, the standard deviation squared).

**ERROR VARIANCE** - component of total *variance*, which estimates the non-systematic variability of the values ​​of any variable caused by random factors or individual differences.

**INDUCTIVE STATISTICS** - see Output Statistics.

**INTERVAL SCALE** - one of the measurement scales, which, in addition to the relationships indicated for the scales of names and order, displays the ratio of distances (differences) between pairs of objects. A positive linear transformation (isometric transformation) is permissible for it. The Celsius and Fahrenheit scales, with the help of which the physical temperature is measured, are examples of interval scale. In psychology, such scales include the measurement scales of various subjective phenomena obtained by the method of paired comparisons.

**PIRSON CORRELATION COEFFICIENT** - is the statistics used to measure the strength of the relationship between variables on an interval scale or in a ratio scale. It belongs to the class of parametric statistics. The insignificance of Pirson correlation coefficient cannot be interpreted as the absence of a connection between variables, one can reliably speak only of the absence of a linear connection.

**SPEARMAN RANK-ORDER CORRELATION COEFFICIENT-** *nonparametric statistics* used to assess the strength of the connection between two variables, measured on *ordinal scales*.

**NORMAL DISTRIBUTION CURVE-** a graphical representation of the probability of *normal distribution.*

**WILCOXON CRITERION** (Wilcoxon matched-rank test) - a nonparametric criterion for statistical inference about the significance of the difference between two dependent samples (for example, measurements of a variable in the same group of subjects “before” and “after” the experimental exposure). A variable can be measured on an ordinal or stronger scale. To calculate statistics, the ranks of the absolute differences between the first second dimension are used: the value of the statistics is defined as the sum of the ranks for the rarer shifts (positive or negative differences). In Russian literature, Wilcoxon criterion is often designated as T.

**CHI-SQUARE CRITERION TEST** (chi-square test) - is a nonparametric inference criterion that is widely used to compare frequency distributions, which means that it is applicable even to data in a nominal or ordinal scale. It can be applied in a situation where we simply count how many times an event (for example, some form of behavior, a particular disease, etc.) occurs in different samples or conditions (for example, in men and women; before exposure and after exposure). If the initial data are quantitative (*an interval scale or a scale of relations*), then it is not difficult to transform them into a scale with two or three ordinal categories (such as “low”, “medium”, “high”). An important way to apply the test is to test the relationship between discrete variables (e.g., whether smoking and lung cancer incidence are related; if there is a connection between accentuations and sociometric status), i.e. for the analysis of contingency tables. A synonym for the x2 criterion test, the (chi-square goodness of test).

**CIRCULAR DIAGRAM** - a graphical way of representing structural data in the form of a circle (round pie) with sectors, the sizes of which are proportional to the parts of the displayed whole (frequency distribution); allocation of any resources such as time, money, etc.). Synonym for *pie chart*.

**LATIN SQUARE** (Latin-square design) - with an initially intragroup plan, the method of forming blocks with a different order of presentation of conditions (differing in the level of the independent variable or a combination of levels of several independent variables). It is characteristic for latin square that the number of blocks is equal to the number of conditions, and each experimental condition occurs in each position of the sequence of conditions only once (for example, under three conditions, the following three blocks will correspond to the Latin square: АВС; ВСА; САВ). In fact, the use of latin square to balance the effect of order turns the intragroup plan into an intergroup one, since the subjects are divided into groups so that one of the blocks is used in each group. The results allow to estimate the size of the adjustment effect, as well as statistically exclude its effect on the dependent variable by combining the data (for each condition) obtained in different groups (blocks).

**VARIABILITY MEASURES** (measures of variation) - *descriptive statistics* that serve as an indicator of how the distribution values ​​are “scattered” around a particular measure of the central tendency. Variability measures include variance, range, standard deviation. Synonym for indicators of variability (variation).

**CENTRAL TENDENCY MEASURES** - statistical measures (descriptive statistics) of the representative value of all measures in the distribution around which other measures are scattered. It includes mean, median and fashion. Synonym for central trend indicators.

**SCORING METHOD** - see Rating Scale.

**MULTI-VARIANT ANALYSIS** - a set of methods of mathematical statistics designed to investigate the interrelationships of a set (at least three) variables simultaneously. Synonym for multivariate analysis methods. This concept includes, for example, *multiple linear* regression (and non-linear too), multiple analysis of variance (MANOVA), *multivariate scaling, cluster analysis, factor analysis*. Synonym for multivariate statistical analysis.

**MULTI-DIMENSIONAL SCALING** - a group of subjective scaling methods that use different types of data on the similarities and differences in stimuli. The procedure consists in presenting pairs of stimuli and evaluating by the subjects the degree of difference between them using, for example, a 10-point scale - from 0 (no difference) to 9 (maximum difference). On the basis of the matrix of pairwise differences between stimuli, the problem is solved to determine the structure of the basic subjective space of the minimum possible dimension, in which each stimulus would be represented by a point (or vector). See also *Dimensions in Psychology*.

**MULTIPLE LINEAR REGRESSION** - mathematical methods for approximating the dependence of the variable y (it is called the criterion variable) on several independent variables x (the so-called predictor variables) using a linear combination of the latter.

**MULTIPLICATIVE SIGNALS** - multiplying signals, and the resulting signal is equal to the product of the simultaneously acting signals that form it. Compare *Additive signals*.

**NON-PARAMEGRIC STATISTICS and CRITERIA** (nonparametric statistics, nonparametric tests) - statistics and statistical tests for testing the null hypothesis that do not require1) assumptions about the normal distribution of the measured trait (variable) in the *general population* and 2) measurements on an interval scale or a scale of relations. It can be said that the statistics on which nonparametric tests are based do not use distribution parameters (such as mean and variance), but data such as frequencies and ranks.

**NON-PARAMETRIC CRITERION** - see Non-parametric statistics and tests.

**CONTINUOUS VARIABLE** - a variable, be capable of taking an infinite number of values ​​and capable of changing by any amount. Compare *Discrete variable*.

**NOMINAL SCALE** is the weakest measurement scale, which reflects only the equivalence relation, by means of which objects are grouped into separate non-overlapping classes, and the class number actually has no quantitative content and can be replaced by a name, cipher, etc. An example of a scale of this kind is the numbering of players in sport teams. Synonym for naming scale.

**NORMAL DISTRIBUTION** - probability distribution, depicted as a unimodal symmetric curve in the shape of a bell (*normal curve*), mathematically described by a formula with two parameters, mean and variance. It is used to approximate the distribution of the sample mean and statistical inference when *testing hypotheses*.

**DESCRIPTIVE STATISTICS** - statistical procedures and indicators for economical description, analysis and generalization of data; traditionally D. S. includes measures of the central tendency (for example, median, mode, and mean) and measures of variability. Synonym for *descriptive statistics*.

**TYPE I ERROR** - when statistically testing the hypothesis, the wrong decision to reject the null hypothesis, but (for example, the hypothesis about the absence of differences in mean values, 0 independence of variables) in fact the data variability was purely random. The reverse side is T. I. E. is the recognition of the presence of a statistically significant effect or the fact of dependence in their absence. Before the experiment, the researcher determines the level of significance (denoted by the Greek letter “a”) the permissible degree of risk to commit T.I.E., i.e., the probability that the observed change in the dependent variable happened by chance. Usually, p = 0.05 or 0.01 is chosen as the significance level at which the null hypothesis is rejected (a nonzero hypothesis is accepted if p is less than the selected significant level). Synonym for type I error.

**TYPE II ERROR** - acceptance of the *null hypothesis*, when in reality it is incorrect (equivalent to: rejection of the correct non-null hypothesis); for example, type II error arises in cases where the hypothesis of the absence of a change (difference) is accepted, but in reality it takes place. The Greek letter «B» indicates the probability of making this mistake; this probability decreases with increasing a (increasing the *level of significance*) or size sampling. Besides, type II error probability can be reduced by decreasing the *variance* within the sample or increasing the experimental impact.

**MEASUREMENT ERROR** - random or systematic measurement error caused by any factor that creates a bias in the measured value of some variable.

**PARAMETER** - a value (characteristic) calculated for all possible observations in the general population, for example, *general mean* (p) in contrast to the sample *mean* M.

**PARAMETRIC CRITERION** - a statistical inference criterion that requires assumptions about the probability distribution of a variable in the *general population* (usually a *normal distribution* is assumed) and uses such parameters of this distribution as means and variances (for example, Student t- test and F- test). Compare *nonparametric statistics and tests*.

**VARIABLE** - See Variables.

**TASK VARIABLE** - an independent variable, typical for psychological research, associated with changes in the type, level of complexity or task materials that the subjects solve during the study (for example, mazes with different levels of difficulty, the amount of memorized material).

**VARIABLE EQUATION** (matching variable) - a variable (usually subjective) used to form pairwise equalized groups. See *pairwise matching group plan*.

**VARIABLES** - characteristics (characteristic, quality) that can take two or more values and can be measured or vary systematically. Psychological research usually deals with three types of variables: 1) external (contextual) variable, which refer to the conditions of life, development and behavior (for example, culture, state and era is also variable). 2) Subjective variable, which relate to mental processes and personality traits (for example, the volume of short-term memory, the coefficient of intelligence; gender, ethnicity, etc. Identity; native language); sometimes they include organismic variable (for example, heart rate, blood type, somatotype, cranial index, gender), 3) activity and behavioral variables (for example, academic performance, typical walking speed, reaction time, and target variable and task variable). The so-called demographic characteristics, in terms of the above classification, mainly refer to subjective variable.

**MODERATOR VARIABLES** - variables (such as gender, age, socioeconomic status, etc.) that influence relationships (direction and strength of the relationship) and possible correlations between other variables. Synonym for moderators. See *Moderator Effect*.

**TIME SERIES PLAN** - one of the forms of the *intragroup plan*, in which repeated measurements of the dependent variable are sequentially performed in the presence and absence of experimental exposure.

**REPEATED MEASUREMENT PLAN** - the same as the Intra-group plan, that is, an experimental plan which the same group of participants sequentially (*see Order Effect*) is exposed to all levels of the independent variable (all combinations of levels of intermixing). See also *Latin square*.

**ORDINAL SCALE** - scale of measurements, which reflects the equivalence relation, and the order relation; any monotonic transformation will be admissible for it. Examples: school grades, mineral hardness scale (Mohs scale). Synonym for rank scale.

**PSYCHOMETRICS** - a section of mathematical psychology that studies theoretical and methodological problems of measurement in psychology; develops mathematical models for methods of psychological measurement (for example, Thurstone model, multidimensional scaling model, patent trait model, factor analysis) and data processing; defines the formal requirements for experimental verification of psychometric properties (validity, reliability, etc.) of various methods of psychological, including psychodiagnostic, measurement. The term first appeared in the works of German philosopher H. Wolff. Synonym for psychometry. See *Psychodiagnostics*.

**RANGE** - a measure of variability, the difference between the largest and smallest value in the sample.

**DIMENSION OF THE FACTOR SPACE** - the number of orthogonal factors extracted from the factor analysis.

REGRESSION ANALYSIS - the mathematical method of “fitting” a mathematical function to statistical data. The simplest problem is to approximate the scattering diagram of two variables with a linear function y = ax + b. The equation that sets the regression line makes it possible for any value of the independent variable to calculate the corresponding value of the dependent variable. The term “regression” was introduced into science by F. Galton. The more complicated case is the multiple linear regression.

**RATING SCALE** - a lot of verbal categories (for example, “never”, “rarely”, “moderately often”, “often”, “always”), numbers (for example, 0, 1, 2, 3 and 4), geometric points, presented in a linear segment, as well as various combinations of these means, allowing the respondent to give a subjective quantitative assessment of his condition and his features or properties of any other person, object, phenomenon. Rating scale can be mono or bipolar (e.g., “ugly”, “unsympathetic”, “indifferent”, “pretty”, “beautiful”; bipolar numerical scales, the ends of which are indicated by words-antonyms, are used in the semantic differential). Sometimes translated as “scoring scale”. In the Russian literature, the term “scoring method” is used as a synonym for the rating.

**RANDOM DISTRIBUTION** (random assignment, random allocation) a normative method for creating equivalent groups within the framework of an intergroup design by means of a randomization procedure, due to which all subjects have an equal probability of getting into one or another group (and thus any condition - control or experimental).

**RANDOM SELECTION** - the procedure of selection (sampling) of subjects, in which all representatives of the studied general population have an equal chance of entering the sample. See *Random sampling*.

**MIXED FACTOR PLAN** - a factorial plan having at least one intragroup and one intergroup *independent variable*.

**BIAS** - systematic error of measurement, observation or estimation, i.e., the difference between the assumed (expected, estimated) value and the true one. There are a huge variety of reasons (sources) and, accordingly, types of bias (see, for example, *Sampling bias*). It is noteworthy that the concept “Bias” is widely and traditionally used in the general theory of measurement and in statistics, but in human psychology and other humanities, in addition to the general scientific meaning of this term, a large class of subjective bias effects associated with the use of people as respondents (evaluators, experts, judges), and the study of these effects may be of independent interest for psychology. In this regard, it seems quite appropriate to single out the subjective effects of bias in a special category, designating it with the term “bias”.

**CONFOUNDING VARIABLE** - see *Side - effect Variable*.

**MEAN** (average) - one of the measures of the central tendency of distribution; in the case of a discrete set of numerical data, mean is calculated by adding all the values ​​and then dividing the sum by the number of values. Synonym for *arithmetic mean*.

**STATISTICS** - quantitative indicators of two types: descriptive statistics, which summarize the sample data (mean, standard deviation and correlation coefficient), and inference statistics (or statistics for testing hypotheses), which are used in statistical tests and indicate whether the null hypothesis can be rejected (e.g. F, t, U, T, X2). See also Statistical Significance.

**INFERENTIAL STATISTICS**- statistical indicators (coefficients) that allow to determine the probability that the result is random (or vice versa); for example, to determine the level of significance of differences between the means of two or more groups. Synonym for *inductive statistics, statistics for hypothesis testing*. Besides, descriptive statistics, while presenting the results of the work, the results of the analysis of statistical significance must be reported, for which inferential statistics is required. The general rule for the presentation of statistical data indicates that in each case the significance ​​of descriptive statistics must precede data on inferential statistics. See also *Nonparametric Statistics*.

**STATISTICAL SIGNIFICANCE** - the degree of the researcher`s confidence in the possibility (legitimacy) of rejecting the null hypothesis; this confidence is associated with the value of the probability (p) that the obtained result could be obtained due to the action of only random factors. A researcher`s confidence is justified (reasonable) if this probability is less than the significance level (p <0.05 or p <0.01). In this case, the result is said to be statistically significance or statistically significant (significant).

**STATISTICAL REGRESSION AS A THREAT TO INTERNAL VALIDITY** - see *Regression to the mean*.

**T-SCORES** - the final MMPI scores (see section 6), obtained by converting raw scores using standardized means to facilitate comparison and interpretation. Synonym for T- points, T- grades. In general, the conversion to T-points is carried out according to the formula: T = 50 + [10 (X - M) SD], where M is the average of primary (raw) indicators for a normative sample of healthy individuals, CD) is the standard deviation for the same sample, X is the primary result of a particular subject on a particular scale (in MMPI). If the distribution is normal, it should be expected that 95% of cases fall in the range between 30 and 70 T-points.

**FACTOR PLAN**- an experimental plan containing more than one independent variable (s). In this case, if all combinations (“cells”) of fixed levels of independent variables are used, then the factor plan is completed. It is generally accepted to denote the type of a complete factor plan by means of factors indicating the number of levels of each independent variable: for example, the simplest factorial design is designated as a 2x2 design (read: “2 by 2”); plan 2x4, which means there are two levels of the first factor and four levels of the second factor. Statistical processing of the results of measuring the dependent variable in different cells, as a rule, is carried out using ANOVA *analysis of variance*, which allows one to assess the main effects and interactions of factors.

**FREQUENCY DISTRIBUTION** - a function (functional dependence) that determines the frequency with which different values ​​of the measured variable are observed. Empirical F.D. is set using tables and graphs showing the absolute or relative number of cases for each value of the result or for each of several ranges (intervals) of variable values. Synonym for distribution of frequency. Theoretical frequency distribution (probability distributions) is often given analytically. Many phenomena have normal probability distribution.

**SCALE OF MEASUREMENTS** - is a set of numbers, the relations that reflect the relations between the objects of the empirical system. In particular, S. M. can be called the measurement results obtained by a certain system of questions posed to the subject, and then the measurement tool itself (i.e., a system of questions, questionnaire, test). Scales are divided by type according to what relations they reflect, or, which is equivalent, by those admissible (mathematical) transformations that leave the corresponding relations invariant. A simple typology of scales, proposed by the American psychologist-psychophysicist S. Stevens (1946), is widely known: *a scale of relations, an interval scale, an ordinal scale and a nominal scale*.

**LIKERT SCALE** - 1. Likert scale - one of the main types of methods for measuring attitudes. Synonym: Likert (Likert`s) summative assessment method. Likert scale consists of a set of statements reflecting various degrees and ways of relating to a certain target object or phenomenon. The procedure for measuring aptitude is to identify the respondent's degree of agreement or disagreement with each item using 5 or 7-position verbal rating scale from “strongly agree” to “completely disagree”. These answer options are converted into points, the final score is calculated as the sum of the points received on all points, and it is the assessment of the person`s attitude. 2. This is often referred to only as the general rating scale, with the help of which the respondent expresses the degree of his agreement with certain statements, including outside the context of measuring the attitude.

**SCALE OF LIES** - a control scale in a number of personality questionnaires, designed to assess the propensity of the subject to the “facade effect” (see Bias of social desirability); consists of questions asking about very common and socially undesirable, but not serious offenses (for example: “Have you ever cheated on ...?”, “Have you ever told a lie?”). If the subject denies this, then he is either a saint or not sincere.

**RATIO SCALE** - measurement scale, the admissible transformation is only similarity transformation (multiplication of scale values ​​by a constant). In physics, many measurement procedures satisfy this type of scale, for example, mass in kg, length in m, temperature in Kelvin. Sometimes, as a synonym for ratio scale the term “absolute scale” is used because the zero point is not arbitrary here and is called “absolute zero”. However, the term “absolute scale” also has a narrower meaning when it is used to denote a scale that allows only identical transformations and displays the number of “indivisible” and “homogeneous” (discrete) objects, for example, the number of inhabitants of a city N, the number of teeth, the volume of a short-term memory, etc. Synonym *proportional scale*.

**SCALING** - basically a synonym for the term “measurement”, especially in psychology. See *Dimensions in Psychology, Multidimensional Scaling*.

**CONCLUSION**

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