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Methodological Tools and Techniques Applied in Modern University Surveys

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Abstract. The topicality and urgency of the ongoing survey can be supported with such arguments as: increased amounts of research make progress possible; research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking of university students' mindset; has gained added importance, both for government and business; provides the basis for nearly all government policies in our economic system; has its special significance in solving various operational and planning problems of business and industry; is equally important for social scientists in studying social relationships and in seeking answers to various social problems. The actuality of our research can be proven with the one of the main stages in a research study – data collection that enables the researcher to find answers to research questions. Data collection is the process of collecting data aiming to gain insights regarding the research topic. There are different types of data and different data collection methods accordingly. However, it may be challenging for researchers to select the most appropriate type of data collection based on the type of data that is used in the research. This article aims to provide a comprehensive source for data collection methods including defining the data collection process and discussing the main types of tools and techniques. The possible methodologies for gathering data are then explained based on these categories and the advantages and disadvantages of utilizing these methods are defined. Finally, the main challenges of data collection are listed and in the last section, ethical considerations in the data collection processes are reviewed. Consequently, the purpose of the article is to study the methodological techniques and tools applied in modern teaching at universities, which are aimed at formation of individual readiness for effective cross-cultural interaction and professional competitiveness at the global labor market. In particular, the main tasks of the ongoing study are to: firstly, single out the priority directions (topics) of scientific research and scientific and technical (experimental) developments of the National Academy of Pedagogical Sciences of Ukraine for 2022-2026; secondly, give a brief description of the basic types of research; thirdly, describe top priority modern methods and tools that can be useful in shaping professional competencies of modern university students in current tough conditions. The general survey outcomes have witnessed that descriptive or survey method, research tools of focus group discussions, research tools of observation, direct measurement and the review of secondary data sources have a lot of merits and application of which can motivate university students' research and educational activities.

Key words: data collection, research methodology, tools and methods, academic research paper, data collection techniques; descriptive or survey method, research tools of focus group discussions, research tools of observation, direct measurement; the review of secondary data.

Використання методологічних засобів та технік у сучасних дослідженнях університетів

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Анотація. Актуальність презентованого дослідження можна підтвердити такими аргументами, як: збільшення обсягів досліджень робить можливим прогрес; дослідження формує наукове та індуктивне мислення та сприяє розвитку логічних форм мислення у студентів; набуває додаткового значення як для уряду, так і для бізнесу; забезпечує основу для майже всіх державних політик в економічній системі; має особливе значення при вирішенні різноманітних оперативних і планових завдань бізнесу та промисловості; однаково важливе для суспільствознавців у вивченні соціальних відносин і в пошуку відповідей на різні соціальні проблеми. Актуальність нашого дослідження можна підтвердити одним із основних етапів дослідження – збором даних, які дають змогу досліднику знайти відповіді на запитання дослідження. Збір даних — це процес отримання

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інформації з метою формування уявлення щодо теми дослідження. Існують різні типи і методи збору даних. Однак, дослідникам може бути складно вибрати найбільш прийнятний тип збору даних на основі типу результатів, які використовуються в дослідженні. Ця стаття спрямована надати вичерпне джерело методів збору даних, включаючи обговорення основних типів інструментів і методів. Також, на основі цих категорій пояснюються можливі методології збору даних, а також визначаються переваги та недоліки використання цих методів. Крім того, перераховано основні проблеми збору даних. Отже, метою статті є дослідження методичних прийомів та інструментів, що застосовуються в сучасному навчанні закладів вищої освіти, спрямованих на формування готовності особистості до ефективної міжкультурної взаємодії та професійної конкурентоспроможності на світовому ринку праці. Завданнями поточного дослідження є: по-перше, виокремити пріоритетні напрями (тематику) наукових досліджень та науково-технічних (експериментальних) розробок НАПН України на 2022-2026 роки; по-друге, дати коротку характеристику основних видів досліджень; по-третє, описати першочергові сучасні методи та засоби, які можуть бути корисними у формуванні професійних компетенцій студентів університету в сучасних складних умовах. Загальні результати даного наукового доробку засвідчили, що описовий метод або метод опитування, дослідницькі інструменти фокус-групових дискусій, дослідницькі інструменти спостереження, прямі вимірювання та огляд вторинних джерел даних мають багато переваг, застосування яких може мотивувати студентів університету до навчально-наукової діяльності.

Ключові слова: збір даних, методологія дослідження, засоби та методи, наукова стаття, методи збору даних; описовий або опитувальний методи, інструменти дослідження фокус-групових дискусій, інструменти дослідження спостереження, пряме вимірювання, огляд вторинних даних.

I Introduction

Reasons that make people to undertake research are a question of fundamental importance. The possible motives for doing research may be either one or more of the following:

- *desire to get a research degree along with its consequential benefits;*
- *desire to face the challenge in solving the unsolved problems, i.e., concern over practical*
- *problems initiates research;*
- *desire to get intellectual joy of doing some creative work;*
- *desire to be of service to society;*
- *desire to get respectability.*

However, this is not an exhaustive list of factors motivating people to undertake research studies. Many more factors such as directives of government, employment conditions, curiosity about new things, desire to understand causal relationships, social thinking and awakening, and the like may as well motivate (or at times compel) people to perform research operations [9; 15; 19].

Research in common parlance refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation. The *Advanced Learner's Dictionary of Current English* lays down the meaning of research as “a careful investigation or inquiry specially through search for new facts in any branch of knowledge.” *Redman and Mory* define research as a “systematized effort to gain new knowledge.” [7; 9]

Some people consider research as a movement, a movement from the known to the unknown. It is actually a voyage of discovery. We all possess the vital instinct of inquisitiveness for, when the unknown confronts us, we wonder and our inquisitiveness makes us probe and attain full and fuller understanding of the unknown. This inquisitiveness is the mother of all knowledge and the method, which man employs for obtaining the knowledge of whatever the unknown, can be termed as research.

Research is an academic activity and as such the term should be used in a technical sense. According to *Clifford Woody* research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis. *D. Slesinger and M. Stephenson* in the *Encyclopedia of Social Sciences* define research as “the manipulation of things, concepts or symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art.” [7; 11; 13]

Research is, thus, an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment. In short, the search for knowledge through objective and systematic method of finding solution to a problem is research. The systematic approach concerning generalization and the formulation of a theory is also research. As such the term ‘research’

refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions towards the concerned problem or in certain generalizations for some theoretical formulation [7] (fig. 1).

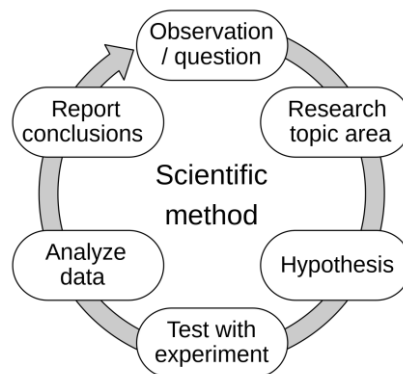


Fig. 1. Components of the Scientific Research Method

At the outset of the ongoing paper we are coming up with the following the important definitions of research:

- research is an endeavor / attempt to discover, develop and verify knowledge. It is an intellectual process that has developed over hundreds of years ever changing in purpose and form and always researching to truth (*J. Francis Rummel*);

- research is an honest, exhaustive, intelligent searching for facts and their meanings or implications with reference to a given problem. The product or findings of a given piece of research should be an authentic, verifiable contribution to knowledge in the field studied (*P.M. Cook*);

- research may be defined as a method of studying problems whose solutions are to be derived partly or wholly from facts (*W.S. Monroes*);

- research is considered to be the more formal, systematic intensive process of carrying on the scientific method of analysis. It involves a more systematic structure of investigation, usually resulting in some sort of formal record of procedures and a report of results or conclusion (*John W. Best*);

- research comprises defining and redefining problems, formulating hypothesis or suggested solutions, collecting, organizing and evaluating data, making deductions and reaching conclusions and at last careful testing the conclusions to determine whether they fit the formulated hypothesis (*Clifford Woody*);

- research is a systematic effort to gain new knowledge (*Redman & Mori*);

- social research may be defined as a scientific undertaking which by means of logical and systematized techniques aims to discover new facts or verify and test old facts, analyze their sequences, interrelationships and casual explanation which were derived within an appropriate theoretical frame of reference, develop new scientific tools, concepts and theories which would facilitate reliable and valid study of human behavior. (*P.V. Younge*) [8; 10; 15; 18] (fig. 2).

Taking all research definitions into consideration we can come up with the ones of our own: “*Data collection is the process of gathering and measuring information on variables of interest in the area of education, in an established systematic fashion that enables the scientists to answer stated research questions, test hypotheses, and evaluate outcomes*”.

Different methods for gathering information regarding specific variables of the study aiming to employ them in the data analysis phase to achieve the results of the study, gain the answer of the research Data Collection Methods and Tools for Research; A Step-by-Step Guide to Choose Data Collection Technique for Academic and Business Research Projects Data collection as a main stage in research can overshadow the quality of achieving results by decreasing the possible errors which may occur during a research project. Therefore, alongside a good design for the study, plenty of quality time should be spent in the collection of data to gain appropriate results since insufficient and inaccurate data prevents assuring the accuracy of findings [2; 3; 8] (fig. 3).

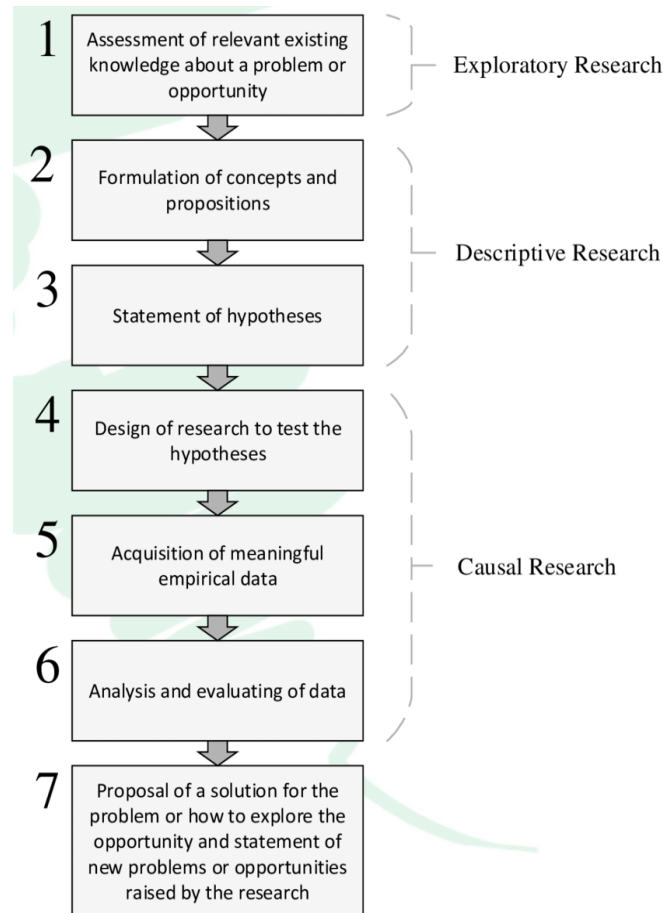


Fig. 2. Common Research Types

The Scientific Method as an Ongoing Process

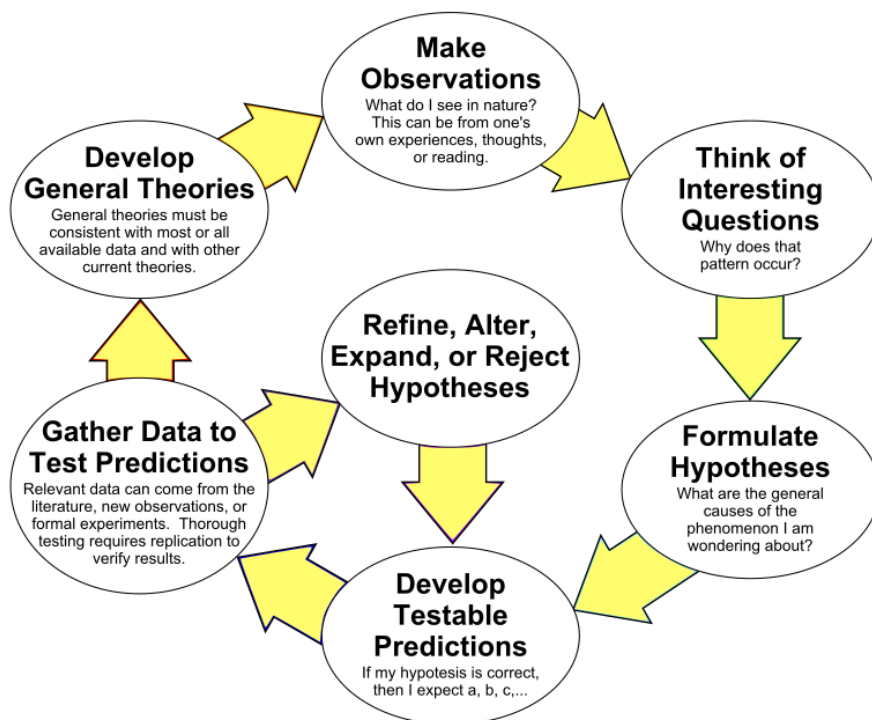


Fig. 3. The Scientific Method as an Ongoing Process

On the other hand, although a suitable data collection method helps to plan good research, it cannot necessarily guarantee the overall success of the research project [9].

The purpose of the article is to study the methodological techniques and tools applied in modern teaching at universities, which are aimed at formation of individual readiness for effective cross-cultural interaction and professional competitiveness at the global labor market.

In particular, *the main tasks of the ongoing study* are to: firstly, single out the priority directions (topics) of scientific research and scientific and technical (experimental) developments of the National Academy of Pedagogical Sciences of Ukraine for 2022-2026; secondly, give a brief description of the basic types of research; thirdly, describe top priority modern methods and tools that can be useful in shaping professional competencies of modern university students in current tough conditions.

II Materials and Methods

The methodological basis of the study is a set of principles and approaches that determine the methodological guidelines of cross-cultural education of masters in the field of tourism, including: the principle of unity of theory and practice; principle of certainty; the principle of specificity; the principle of cognoscibility; the principle of objectivity; principle of causality; the principle of general development; the principle of general communication; the principle of dialectical contradiction; the principle of dialectical negation; the principle of historicity; the principle of systematicity; the principle of unity of analysis and synthesis; the principle of the unity of the historical and the logical; the principle of going from the abstract to the concrete; the principle of determinism and historicism; objectivity. In the study, we focused on the integration of the following approaches:

- systemic, which enables the study of the components of cross-cultural education and their interrelationships and created the basis for the development of recommendations for improving the training of specialists in the field of tourism in Ukraine;

- performing, which consists in a value attitude to the subject-oriented organization and management of students' educational activities, contributes to the restructuring of the procedural and technological aspect of the educational process with the aim of mastering the skills of professional and practical activity in its holistic perception by its participants;

- personally-oriented, which involves the formation and development of personal qualities of future specialists in the field of tourism, considering their motives, abilities, activity, intelligence, individual psychological and functional needs; directs the training of future specialists in the field of tourism to the students' motivated acquisition of cross-cultural knowledge, abilities and skills for future professional activity in the conditions of European integration;

- synergistic, based on scientific ideas about the world as an interaction of complex systems, provides conditions for self-organization of future specialists in the field of tourism during adaptation to real professional activity in the new conditions of European integration processes;

- competitive, which is decisive in the process of formation of practical competences (in particular, communicative, foreign language, information) of specialists in the field of tourism, considering the specifics of their professional activity, necessary for effective professional activity and for the purpose of self-improvement throughout life;

- cultural, which is one of the system-forming approaches and enables an objective comparative-pedagogical analysis of the processes taking place in European society in general and in education in particular [fig.1] [4; 13; 19; 22].

Moreover, in the frame of ongoing pedagogical survey case study method was applied. Case study method was used to find more information through carefully analyzing existing cases. It was included into research to gather empirical evidence for investigation purpose. It is a method to investigate a problem within its real-life context through existing cases, for example professional training outcomes of university undergraduates.

We had to carefully analyze making sure the parameter and variables in the existing case are the same as to the case that is being investigated. Using the findings from the case study, conclusions can be drawn regarding the topic that was being studied [19] (fig. 4).

Types of Research Methodology

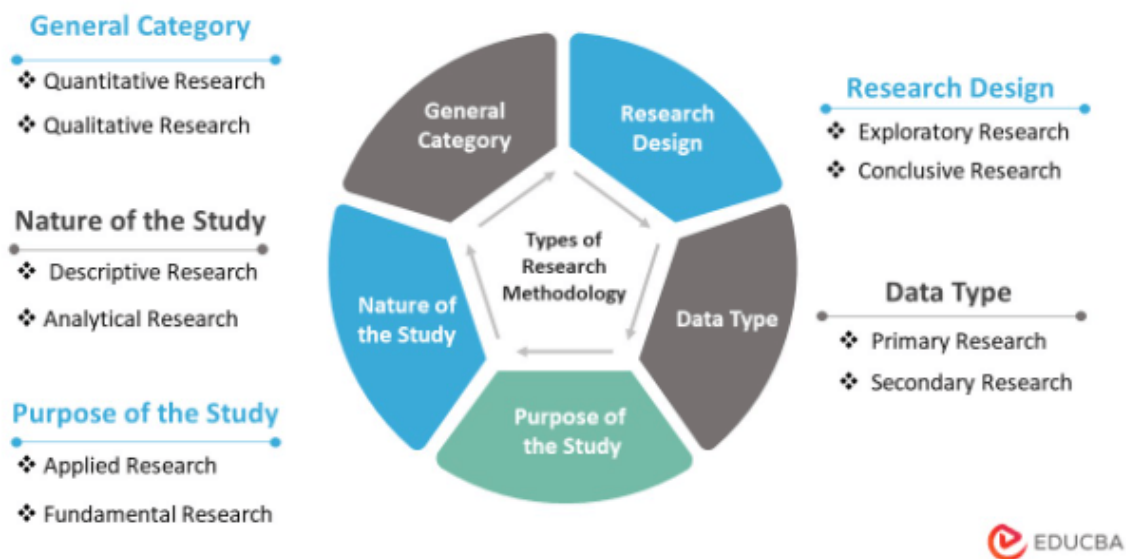


Fig. 4. Methodology Types of the Scientific Research

Priority directions (topics) of scientific research and scientific and technical (experimental) developments of the National Academy of Pedagogical Sciences of Ukraine for 2022-2026.

Actual problems of the philosophy of education, methodology, theory, history of education and pedagogy are as follows:

- Philosophy of education in the context of modern civilizational challenges to man and education.
- The philosophy of human-centeredness as a methodology of personally oriented education.
- Education throughout life, broad (formal, informal, informal) education.
- Disciplinary, interdisciplinary, multidisciplinary research in the field of education.
- Conceptualization and modeling of historical and pedagogical knowledge (epistemology and axiology).
- Reform processes in education.
- Theoretical and methodological foundations of the organization of educational systems.
- Methodology and technologies of monitoring studies in education and evaluation of its quality.
- Ensuring gender equality in education.
- Other urgent problems by priority [12; 13].

Actual problems of the development of world, European and national educational systems are as follows:

- History of foreign education
- Activities of international organizations in the development of education.
- Regulatory and legal support for the development of education in the EU countries.
- Patterns and features of the formation of European spaces of education, professional education and training, higher education.
- Trends in the development of the European research area.
- Digital transformation of education and science in the leading countries of the world
- Methodological problems of comparative studies in the field of pedagogy and education.
- Ensuring quality and equal access to education in the educational systems of the world.
- Multicultural education for the harmonization of the globalized world.
- Other urgent problems by priority [11; 12].

Actual problems of the digitization of education are as follows:

- Theoretical-methodological and scientific-methodological support for digitalization of education.
- Design and use of digital information and analytical systems for educational and scientific activities.
- Formation of digital competence, cybersecurity culture of subjects of the educational process, their adaptation in the digital educational environment.

- Creation and methods of using computer-oriented pedagogical systems, distance and mixed learning technologies, digital educational resources and teaching aids.

- Scientific and methodological support for the functioning of electronic educational and scientific libraries and electronic scientific publications.

- Education in the conditions of the COVID-19 pandemic, the development of distance learning forms.

- Other urgent problems by priority.

Actual problems of the pedagogy and psychology of the educational process are as follows:

- Competence-oriented models of didactic and methodical systems. Didactic principles, principles and regularities of education for sustainable development.

- Didactic and methodological principles of designing and implementing STEM/STEAM education. Methods and technologies of STEM/STEAM education.

- Individualization and differentiation of education and upbringing in the conditions of personally oriented education.

- Didactic principles, methods and technologies of formation of key competences, scientific outlook, systematic and critical thinking of pupils and students in the educational process.

- Didactic and methodological principles and technologies of integrated learning.

- Psychological and pedagogical principles of identifying and developing the giftedness of students of education.

- Innovative approaches to the organization of training based on partnership pedagogy and management of a safe educational environment, technologies for preventing bullying and discrimination of participants in the educational process.

- Psychological foundations of designing remote formats of educational and professional activity.

- Mental development, self-realization and self-development of the individual in the educational space.

- Psychological mechanisms of lifelong learning.

- Other urgent problems by priority [11; 12].

Actual problems of the preschool education are as follows:

- Availability and quality of preschool education, their monitoring.

- Educational development of a young child.

- The main directions of education, upbringing and development of preschool children.

- Competency approach in preschool education.

- Education of preschool children in the digital space.

- Designing digital ecosystems of preschool education institutions.

- Creation of an individual developmental environment for preschoolers in preschool and after-school education institutions.

- Socialization (real and virtual) of a preschool child.

- Interaction of preschool education institution, family and primary school.

- Innovations in the education of early and preschool children abroad.

- Other urgent problems by priority.

- Actual problems of the complete general secondary education; specialized education are as follows:

- Didactic and methodical principles of modernization of the content of comprehensive general secondary education. Implementation of state standards of comprehensive general secondary education in educational and training programs, textbooks and manuals.

- Methods and technologies of teaching students at different levels of general secondary education.

- Control, diagnosis and evaluation of the results of educational activities in institutions of comprehensive general secondary education.

- Problems of the theory of the modern school textbook and its quality assessment.

- Other urgent problems by priority [12; 13].

Actual problems of the education of children with special educational needs are as follows:

- Theoretical and methodological principles of psychological-pedagogical and correctional-rehabilitation support of persons with special educational needs.

- Corrective and developmental component of education of children with special educational needs in various institutional conditions.
 - Psychological and pedagogical assessment of the development of children with special educational needs of different age groups.
 - Technologies of inclusive education of persons with special educational needs.
 - Educational and methodical provision of the content of education of persons with special educational needs.
 - Psychological and pedagogical principles of the organization of the system of early intervention and correction of the development of children with special educational needs.
 - Scientific and methodological principles and organizational and pedagogical conditions of educational institutions for children with special educational needs, inclusive resource centers.
 - Technologies of psychological support and psychotherapy of persons with special educational needs.
 - Theoretical and methodological principles of training, retraining and advanced training of specialists for working with persons with special educational needs.
 - Technologies of psychological and pedagogical support of families of children with special educational needs.
 - Other urgent problems by priority [12; 13].
- Actual problems of the theory and technologies of education; extracurricular education are as follows:*
- Educational potential of digital space.
 - Scientific and methodological support for raising children and youth in the digital space.
 - Development of an inclusive educational environment in out-of-school education institutions
 - Moral and civic education.
 - National and patriotic education. Military and patriotic upbringing.
 - Art education and aesthetic education in virtual space.
 - Formation of physical activity, healthy lifestyle and readiness for entrepreneurial activity.
 - Multicultural personality education in the context of European values. Education in borderland conditions.
 - Environmental education of children and youth in the context of ensuring sustainable development of society.
 - Personality development in the open environment of children's and youth associations.
 - Bullying among the participants of the educational process.
 - Other urgent problems by priority [11; 12].
- Actual problems of the professional (vocational and technical) and vocational higher education are as follows:*
- Modeling and forecasting the development of professional and professional higher education in the conditions of digitalization of the economy and society.
 - Theoretical and methodical foundations of the development of professional and professional higher education, taking into account the needs of the national economy and society.
 - Theoretical and methodological principles of designing innovative systems of professional training of future specialists (by branch).
 - Theoretical foundations of the implementation of professional secondary education in vocational and vocational higher education institutions.
 - Theoretical and practical principles of marketing management and quality management of professional education.
 - Methods of teaching general education, general technical, special disciplines, organization of industrial training and practice in institutions of professional and vocational higher education (by branch).
 - Technologies for training future specialists to build a professional career in the conditions of the development of youth entrepreneurship.
 - Other urgent problems by priority [11; 12].
- Actual problems of the higher education are as follows:*
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- Synergy of higher education, science and production as the main resource of the society of knowledge, innovative development.

- Problems and strategies of achieving competitive quality of higher education.

- Models and mechanisms for evaluating the quality of higher education.

- Ranking of higher education institutions in world and national practices.

- Level, branch, typological and network structuring of higher education: models and mechanisms of its optimization.

- Effective governance in institutions of higher education.

- Open science in institutions of higher education.

- Social responsibility of institutions of higher education.

- Competency approach and result paradigm in higher education.

- Other urgent problems by priority [12; 13].

Actual problems of the adult education; teacher education are as follows:

- Development of education of different categories of adult population in Ukraine.

- Forecasting and designing the development of adult education.

- Social partnership in adult education.

- Systems of training of teaching staff to work with adults in Ukraine and in foreign countries.

- Theoretical and methodological principles of continuous professional development of teaching staff in the conditions of informal and informal education.

- Development trends and models of pedagogical education in foreign countries.

- Theoretical and methodological principles of designing innovative models of teacher professional training.

- Fundamentalization of the content of professional training of teachers and other categories of pedagogical workers.

- Scientific and methodical support of professional training of pedagogical workers in institutions of professional pre-higher and higher education.

- Other urgent problems by priority [12].

Actual problems of the management and economics of education are as follows:

- Management of ensuring and improving the quality of education and organizing a safe and healthy educational environment.

- Management technologies are innovations [11; 12; 13].

Materials served as the basement for our current pedagogical survey are the analysis of the basic types of research.

Descriptive and analytical researches.

Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. In social science and business research we quite often use. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. Most ex post facto research projects are used for descriptive studies in which the researcher seeks to measure such items as, for example, frequency of shopping, preferences of people, or similar data. Ex post facto studies also include attempts by researchers to discover causes even when they cannot control the variables. The methods of research utilized in descriptive research are survey methods of all kinds, including comparative and correlational methods.

In *analytical research*, on the other hand, the researcher has to use facts or information already available, and analyze these to make a critical evaluation of the material [7; 10].

Applied and Fundamental Research.

Applied research aims at finding a solution for an immediate problem facing a society or an industrial/business organization, whereas fundamental research is mainly concerned with generalizations and with the formulation of a theory. "Gathering knowledge for knowledge's sake is termed 'pure' or 'basic' research." [7; 9; 18]

Research concerning some natural phenomenon or relating to pure mathematics are examples of *fundamental research*. Similarly, research studies, concerning human behavior carried on with a view to

generalize about human behavior, are also examples of *fundamental research*, but research aimed at certain conclusions facing a concrete social or business problem is an example of applied research. Research to identify social, economic or political trends that may affect a particular institution or the copy research or the marketing research or evaluation research are examples of applied research [7; 8; 17].

Thus, the central aim of applied research is to discover a solution for some pressing practical problem, whereas basic research is directed towards finding information that has a broad base of applications and thus, adds to the already existing organized body of scientific knowledge.

Quantitative and Qualitative Research.

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomenon, phenomena relating to or involving quality or kind. For instance, when we are interested in investigating the reasons for human behavior, we quite often talk of 'Motivation Research', an important type of qualitative research.

This type of research aims at discovering the underlying motives and desires, using in depth interviews for the purpose. Other techniques of such research are word association tests, sentence completion tests, story completion tests and similar other projective techniques.

Attitude or opinion research i.e., research designed to find out how people feel or what they think about a particular subject or institution is also qualitative research [7; 9; 16].

Qualitative Research is especially important in the behavioral sciences where the aim is to discover the underlying motives of human behavior. Through such research we can analyze the various factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing. It may be stated, however, that to apply qualitative research in practice is relatively a difficult job and therefore, while doing such research, one should seek guidance from experimental psychologists [7; 11; 13].

Conceptual and Empirical Researches.

Conceptual research is that related to some abstract ideas or theory. It is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones. On the other hand, empirical research relies on experience or observation alone, often without due regard for system and theory. It is data-based research, coming up with conclusions which are capable of being verified by observation or experiment.

We can also call it as experimental type of research. In such a research it is necessary to get at facts firsthand, at their source, and actively to go about doing certain things to stimulate the production of desired information. In such a research, the researcher must first provide himself with a working hypothesis or guess as to the probable results. He then works to get enough facts (data) to prove or disprove his hypothesis. He then sets up experimental designs which he thinks will manipulate the persons or the materials concerned so as to bring forth the desired information. Such research is thus characterized by the experimenter's control over the variables under study and his deliberate manipulation of one of them to study its effects [7; 8; 11].

Empirical research is appropriate when proof is sought that certain variables affect other variables in some way. Evidence gathered through experiments or empirical studies is today considered to be the most powerful support possible for a given hypothesis [7; 9] (fig. 5).

Some Other Types of Research. All other types of research are variations of one or more of the above stated approaches, based on either the purpose of research, or the time required to accomplish research, on the environment in which research is done, or on the basis of some other similar factor.

Form the point of view of time, we can think of research either as one-time research or longitudinal research. In the former case the research is confined to a single time-period, whereas in the latter case the research is carried on over several time-periods. Research can be field-setting research or laboratory research or simulation research, depending upon the environment in which it is to be carried out [7; 10].

Research can as well be understood as *clinical or diagnostic research*. Such research follows case-study methods or in-depth approaches to reach the basic causal relations. Such studies usually go deep into the causes of things or events that interest us, using very small samples and very deep probing data gathering devices. The research may be exploratory or it may be formalized. The objective of exploratory research is the development of hypotheses rather than their testing, whereas formalized research studies are those with substantial structure and with specific hypotheses to be tested [7; 12; 24].

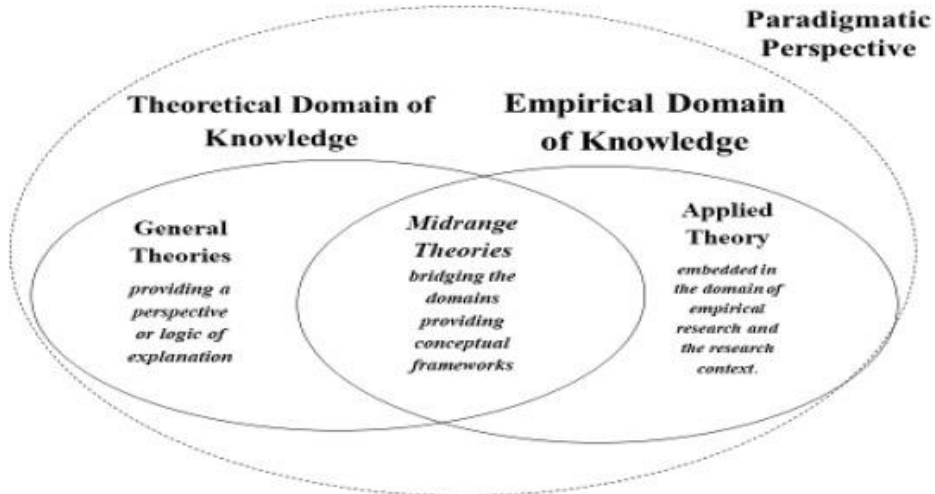


Fig. 5. Interrelations between Conceptual and Empirical Researches

Historical research is that which utilizes historical sources like documents, remains, etc. to study events or ideas of the past, including the philosophy of persons and groups at any remote point of time. Research can also be classified as conclusion-oriented and decision-oriented. While doing conclusion-oriented research, a researcher is free to pick up a problem, redesign the enquiry as he proceeds and is prepared to conceptualize as he wishes [8; 25].

Decision-oriented research is always for the need of a decision maker and the researcher in this case is not free to embark upon research according to his own inclination. *Operations research* is an example of decision-oriented research since it is a scientific method of providing executive departments with a quantitative basis for decisions regarding operations under their control [27] (fig.6).

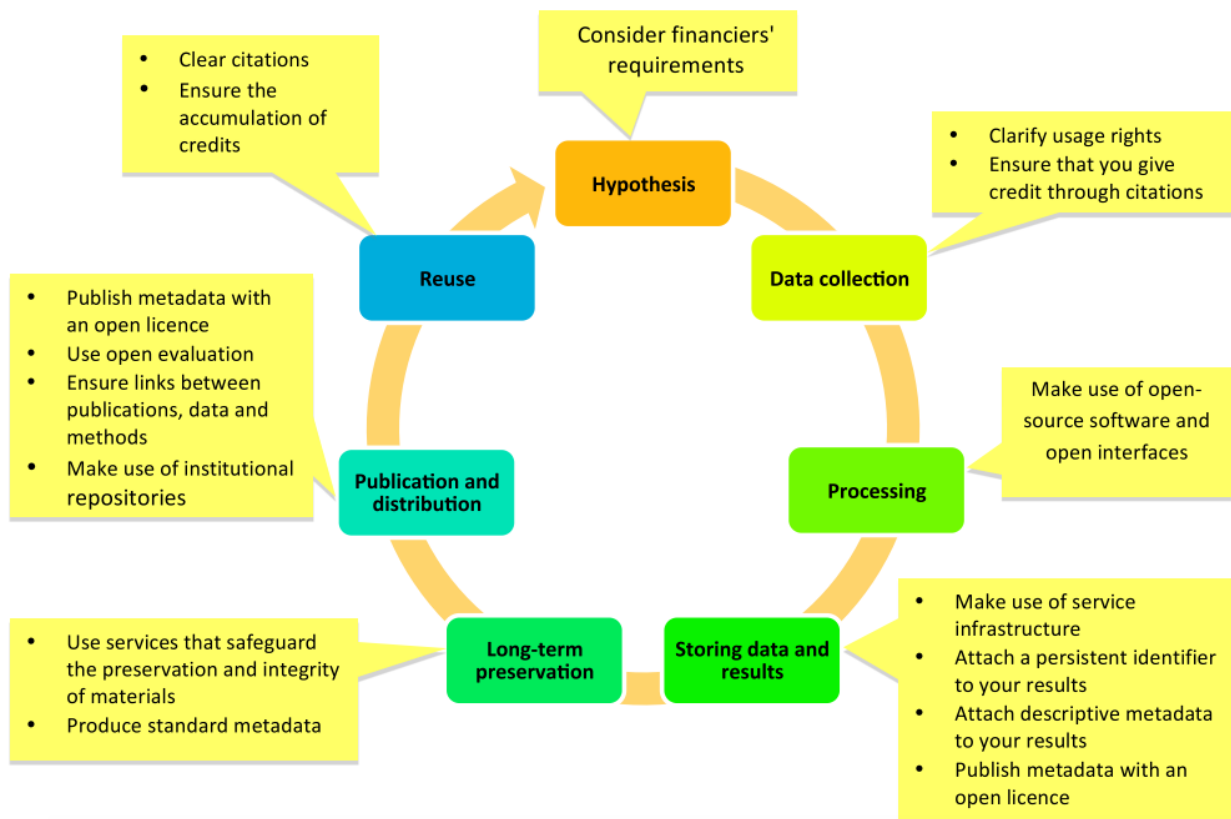


Fig. 6. Scientific Research Cycle

III Results

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods, techniques but also the methodology. Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, the mode, the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem [7; 12].

Many different methodologies can be used for data collection and analysis. Most are based around a core set of basic tools. These include interviews, focus group discussions, observation, photography, video, surveys, questionnaires and case studies. Data may also be generated through direct measurement, reviewing secondary data, and informal project, program management processes.

Descriptive or Survey Method. The term survey is used for the techniques of investigation by a direct observation of a phenomenon or a systematic gathering of data from population by applying personal contact and interviews when adequate information about certain problem is not available in records, files and other sources [14; 17].

Characteristics of Survey Method:

- social survey is confined to the study of specific current problems of society eg poverty, unemployment;
- a survey research is planned collection of data for prediction of relations between the variables;
- survey is concerned with large or widely dispersed group of peoples contrasted with the lab experiments;
- under this method observation, interviews, attitude scales, projective techniques, small scale experiments etc. are used to collect data;
- the facts collected here may form the basis of further social researches [7; 16; 21].

Research Tools of Focus Group Discussions. Focus group discussions (FGDs) are facilitated discussions, held with a small group of the university students who have specialist knowledge or interest in a particular topic. They are used to find out the perceptions and attitudes of a defined group of the university students. FGDs are typically carried out with around 6-12 the university students, and are based around a short list of guiding questions, designed to probe for in-depth information. FGDs are often used to solicit the views of those who would not be willing or able to speak up at larger group meetings [22].

Research Tools of Observation. At its most simple, observation involves 'seeing' things – such as objects, processes, relationships, events – and formally recording the information. There are different types of observation. Structured or direct observation is a process in which observations are recorded against an agreed checklist. Expert observation is usually carried out by someone with specific expertise in an area of work, and involves the expert observing and recording information on a subject. Observation may also be carried out as a participatory exercise. Where this is the case the intended beneficiaries of a project or program are involved in planning an observation exercise, observing, and discussing findings [4; 25; 26; 27].

IV Discussion

The survey method is an important tool to gather evidences relating to certain social problems. The term social survey indicates the study of social phenomena through a survey of a small sampled population and also to broad segments of population. It is concerned with the present and attempts to determine the status of the phenomenon under investigation.

Merits of Survey Methods:

- direct and close contact between researcher and respondents;
- great objectivity;
- testing the validity of theories;

- formulation and testing of hypothesis;
- social surveys are based on actual observation;
- it has universal application [5; 8].

Limitations Survey Methods:

- survey method is costly, time consuming and wasteful in certain cases where the objectives are limited;
- the survey method is unsuitable if the numbers of persons to be surveyed are very large or if they spread over a large geographical area;
- in this method personal bias may vitiate the result;
- it lacks the flexibility;
- in this method, it is very difficult to verify the accuracy of the data collection;
- only useful for current problems;
- it does not permit more comprehensive and dynamic study of the society but deals with the problems of immediate importance only;
- under this method most of the surveys are conducted on sample basis, but if the sample is not carefully planned, inferences drawn may be inaccurate and misleading [9; 13].

In addition to the tools described above, there are also three other basic methods of collecting data that are widely used: *direct measurement and the review of secondary data sources* (fig. 7).

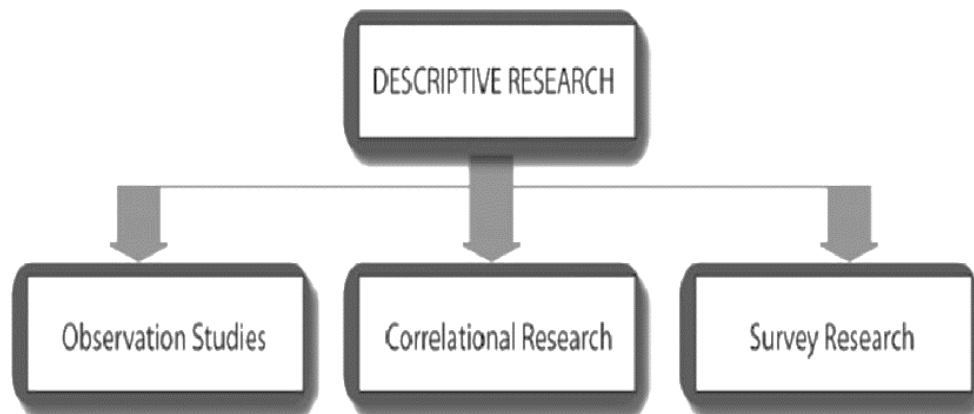


Fig. 7. Descriptive Research Parts

Direct Measurement Tool. Some changes can be measured directly through basic assessments or counting. At outcome and impact level it is often harder to measure change directly. But in some educational skills it is still relatively straightforward.

Where feasible, direct measurement of change is usually the best method of data collection. But the tool used to collect the information (to measure the quality of knowledge, school registers to record attendance at university) is always different [7; 11; 15].

Secondary Data Collection Tool. In social development, when somebody collects data for their own purposes it is called primary data. Sometimes, however, information can be used for planning, monitoring or evaluation that has been collected by university students for their own purposes. This is known as *secondary data* that might include government statistics, reports, manual and website articles, study records, research studies, evaluations conducted by other agencies, and community records – to name just a few. Secondary data is often a valuable source of information that can supplement other forms of data collection for students' articles, projects, scientific papers [7; 9; 13].

V Conclusion

To sum up, the significance of research can be understood keeping in view the following points: to those students who are to write a master's or Ph.D. thesis, research may mean a careerism or a way to attain a high position in the social structure; to professionals in research methodology, research may mean a source of livelihood; to philosophers and thinkers, research may mean the outlet for new ideas and insights; to literary

men and women, research may mean the development of new styles and creative work; to analysts and intellectuals, research may mean the generalizations of new theories.

Thus, research is the fountain of knowledge for the sake of knowledge and an important source of providing guidelines for solving different business, governmental and social problems. It is a sort of formal training which enables one to understand the new developments in one's field in a better way.

Although there are many complex methodologies that can be used to collect and analyze information, many, if not all, are not limited around the same core set of tools and methods described in this paper.

Some are designed for very specific purposes and may require specialist skills to administer, but most are variants on a theme, or are old ideas re-packaged. If the university students can understand and apply the most basic techniques and tools of data collection, then they should be able to apply almost any methodology for data collection and analysis in their scientific and educational activity.

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