

THE ROLE OF SCIENTIFIC EVIDENCE IN PEDAGOGICAL RESEARCH

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Abstract: This article explores the essence of a scientific fact, its role and importance in pedagogical research. It focuses on methods of collecting and analyzing data, the reliability of scientific evidence, and the interconnection between empirical and theoretical approaches. The article emphasizes how evidence-based research contributes to the advancement of pedagogical science and the improvement of educational processes.

Keywords: scientific fact, pedagogical research, empirical data, scientific reliability, methodology, evidence-based education.

Introduction

Pedagogy is a science that studies the comprehensive development of a person, the processes of education and upbringing on a scientific basis, and each of its scientific conclusions is based on evidence. Scientific evidence is understood as objective and reliable data obtained through experiment, observation or statistical analysis. In pedagogical research, evidence is not just a result, but also the basis of the scientific process, a source confirming a theoretical idea. In recent years, the quality of scientific research, the reliability and novelty of scientific evidence in the education system of Uzbekistan have risen to the level of state policy. Presidential resolutions "On increasing the effectiveness of scientific research", the policy of digitization in education, the introduction of modern technologies into pedagogical methodologies - all this requires reliance on evidence-based scientific work. Therefore, the correct selection, collection and analysis of scientific evidence in pedagogical research is the key to the success of research.

Main part

1. Theoretical foundations of scientific evidence

Scientific evidence is the main source of proof of a fact, which is obtained by the researcher as a result of observation, experiment or analysis. In any scientific work Evidence must meet three main criteria: validity, accuracy, and verifiability.

In the field of pedagogy, scientific evidence is used in areas such as studying the learning process, improving teaching methods, and analyzing the psychological state of students. They connect theory with practice and ensure the reliability of scientific results. For example, when determining the level of student mastery, it is necessary to use not only subjective observation, but also empirical evidence such as test results, observation logs, and assessment data in the electronic system. Only then will the results obtained be objective and reliable.

2. The role of scientific evidence in pedagogical research

In pedagogical research, scientific evidence is the main foundation of research. It serves to prove a scientific hypothesis, test a new methodology, or improve an existing theory. For



example, when studying the effectiveness of a new educational technology, a teacher collects evidence such as observations, questionnaire results, student activity, and analysis of test lessons. Based on this evidence, he determines the advantages or disadvantages of the methodology.

The role of scientific evidence is associated not only with the result, but also with the process. That is, the process of collecting, analyzing, and reliably presenting evidence determines the researcher's scientific culture. Therefore, in pedagogical research, it is important to systematize evidence, analyze it statistically and logically.

3. The combination of empirical and theoretical evidence

In scientific research, evidence is divided into two types: empirical (experimental) and theoretical.

Empirical evidence is data obtained from observation, experiment, test, questionnaire, or practical activity.

Theoretical arguments are formed on the basis of scientific analysis, study of existing literature, logical proof, and conceptual generalization. In pedagogical research, it is necessary to combine these two types of evidence. Because relying only on empirical data turns into a collection of facts without theory, and relying only on theory ignores real practice. For example, in a study on the topic of “the impact of interactive methods on educational effectiveness”, when both observations with the participation of students (empirical evidence) and analyses based on teaching theories (theoretical evidence) are used together, the results will be more reliable.

4. Reliability of scientific evidence and methodological foundations

The reliability of scientific evidence is its ability to give similar results when re-examined. If the results of the study are similar in other conditions or in another group, this increases the scientific value of the evidence. Therefore, it is necessary to use statistical methods, computer analysis programs (SPSS, Excel, R) and mathematical modeling methods in pedagogical research. This ensures accuracy and objectivity in processing evidence. From a methodological point of view, the analysis of scientific evidence is carried out in three stages:

1. Data collection (creation of an empirical base),
2. Analysis and processing of evidence,
3. Generalization of the results and drawing a scientific conclusion.

These stages are the main methodological chain of any pedagogical research.

Conclusion

Scientific evidence is the foundation of pedagogical research. They strengthen scientific thought with reliable foundations, serve to improve the educational process and give impetus to the emergence of new pedagogical ideas. Each piece of evidence is a step towards scientific truth. In pedagogical research, the collection, analysis and scientific substantiation of evidence determine the methodological level of the researcher. Therefore, in each scientific work, the evidence must be reliable, verified for accuracy and theoretically grounded. Only then will pedagogical science have a real impact on practice and serve to improve the quality of education.



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