METHODOLOGICAL (PEDAGOGICAL) RESEARCH METHODS: CORE AND AUXILIARY APPROACHES.

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ABSTRACT

This article explores the system of pedagogical research methods, focusing on both core and auxiliary approaches used in educational studies. The study highlights how core methods—such as observation, surveys, tests, and interviews—serve as primary tools for collecting direct data from real educational environments. These methods enable researchers to analyze teaching processes, student behavior, and learning outcomes in a systematic and evidence-based manner. In addition, the article

examines auxiliary methods, including content analysis and expert evaluation, which play a supporting role in strengthening the validity and reliability of research findings. These methods help interpret collected data, assess educational materials, and ensure the scientific accuracy of conclusions. The study emphasizes that the integration of core and auxiliary methods creates a comprehensive methodological framework for pedagogical research. This combination enhances the depth, objectivity, and practical value of educational investigations. Overall, the article underlines the importance of using diverse research methods to improve teaching quality and support the development of modern education systems.

Keywords

Pedagogical research methods, core methods, auxiliary methods, observation, survey, test, interview, content analysis, expert evaluation, education, teaching process, learning outcomes.

Annotatsiya

Ushbu maqolada pedagogik tadqiqot metodlari tizimi, ya’ni ta’lim sohasida qo‘llaniladigan asosiy (core) va yordamchi (auxiliary) yondashuvlar tahlil qilinadi. Tadqiqotda observation, survey, test va interview kabi asosiy metodlar real ta’lim muhitidan bevosita ma’lumot olishning muhim vositalari sifatida yoritiladi. Ushbu metodlar o‘qitish jarayoni, o‘quvchi xulqi va o‘quv natijalarini tizimli va ilmiy asosda o‘rganishga imkon beradi. Shuningdek, maqolada content analysis va expert evaluation kabi yordamchi metodlar ham ko‘rib chiqiladi. Ular olingan ma’lumotlarni tahlil qilish, ilmiy xulosalarni asoslash va tadqiqot ishonchliligini oshirishda muhim o‘rin tutadi. Tadqiqot natijalari shuni ko‘rsatadiki, asosiy va yordamchi metodlarning uyg‘unligi pedagogik tadqiqotlar uchun kompleks metodologik asos yaratadi. Bu esa ta’lim jarayonini chuqurroq o‘rganish, xolis xulosalar chiqarish va ta’lim sifatini

oshirishga xizmat qiladi.

Kalit so‘zlar

Pedagogik tadqiqot metodlari, asosiy metodlar, yordamchi metodlar, kuzatish, so‘rovnoma, test, intervyu, kontent tahlili, ekspert baholash, ta’lim, o‘qitish jarayoni, o‘quv natijalari.

Introduction

Pedagogy as a scientific field is focused on the study and improvement of teaching and learning processes. In order to understand how education works and how it can be improved, researchers use different methodological approaches known as pedagogical research methods. These methods allow scientists and educators to collect, analyze, and interpret data related to teaching strategies, student behavior, and learning outcomes. Pedagogical research methods are generally divided into two main categories: core methods and auxiliary methods. Core methods such as observation, surveys, tests, and interviews are used to gather primary data directly from educational environments. These methods provide first-hand and reliable information about the real processes occurring in classrooms and learning settings. In addition, auxiliary methods like content analysis and expert evaluation play a supportive role in strengthening research quality. They help to interpret collected data, verify findings, and ensure the scientific validity of conclusions. The combination of core and auxiliary methods creates a complete and systematic approach to pedagogical research. This integrated methodology allows researchers to gain a deeper understanding of educational processes and contributes to the development of more effective teaching practices. Therefore, studying pedagogical research methods is essential for improving the quality of education and supporting the continuous development of modern educational systems.

Core Methods in Pedagogical Research

Core methods are the main and most essential techniques used in pedagogical research to collect primary data directly from educational settings. These methods help researchers study teaching processes, student behavior, and learning outcomes in a systematic and reliable way. Core methods are considered fundamental because they provide first-hand information and form the basis of most educational studies. Common core methods include **observation, surveys, tests, and interviews**.

1. Observation as a Core Method

Observation is one of the most important and widely used core methods in pedagogical research. It involves carefully watching and recording students' behavior, interactions, and activities in the learning environment. This method allows researchers to collect real-life data without interrupting the natural process of teaching and learning. Observation can be either structured or unstructured. In structured observation, the researcher follows a specific plan or checklist, while in unstructured observation, the researcher records general impressions and behaviors. This method is especially useful for understanding classroom dynamics, student engagement, and teaching effectiveness. One of the main advantages of observation is that it provides direct and authentic information about what actually happens in the classroom. However, it may also have limitations, such as researcher bias or difficulty in recording all details accurately.

2. Survey as a Core Method in Pedagogical Research

A survey is one of the most widely used core methods in pedagogical research for collecting data from a large number of participants. It involves asking a series of structured questions to students, teachers, or other stakeholders in the educational process. Surveys are typically conducted using questionnaires, which can be

distributed in paper form or through online platforms. The main purpose of a survey is to gather information about participants' opinions, attitudes, experiences, and perceptions related to teaching and learning. This method is especially useful when researchers need to analyze trends, compare responses, or generalize findings across a larger population. Surveys can include different types of questions, such as multiple-choice questions, Likert scale items (e.g., strongly agree to strongly disagree), and open-ended questions. Closed-ended questions make it easier to analyze data statistically, while open-ended questions provide more detailed and personal responses. One of the key advantages of surveys is their efficiency. Researchers can collect a large amount of data in a relatively short time and at a low cost. Additionally, surveys allow participants to respond anonymously, which often leads to more honest and reliable answers. However, surveys also have some limitations. Responses may sometimes be inaccurate if participants misunderstand questions or do not answer seriously. Another challenge is designing clear and unbiased questions that effectively capture the intended information. In pedagogical research, surveys are commonly used to evaluate teaching methods, measure student satisfaction, assess learning difficulties, and gather feedback on educational programs. When designed and implemented properly, surveys provide valuable quantitative and qualitative data that support evidence-based decision-making in education.

3. Test as a Core Method in Pedagogical Research

Testing is a fundamental core method in pedagogical research used to measure students' knowledge, skills, and academic performance. It provides quantitative data that helps researchers evaluate the effectiveness of teaching methods and learning outcomes. Tests are usually designed with specific objectives and can take different forms, such as multiple-choice questions, short answers, essays, or practical tasks. They may be standardized (the same for all participants) or teacher-made, depending

on the purpose of the research. One of the main purposes of testing is to assess how well students have understood the material taught during a course. Researchers use test results to compare student performance before and after applying a particular teaching method, which helps determine its effectiveness. An important advantage of tests is that they provide objective and measurable data, making it easier to analyze results statistically. Tests also allow for comparison between different groups of students. However, testing also has some limitations. It may not fully reflect a student's true abilities, especially if the student experiences stress or anxiety during the test. In addition, poorly designed tests can lead to inaccurate conclusions. In pedagogical research, tests are widely used to evaluate academic achievement, identify learning gaps, and improve instructional strategies. When used correctly, testing is a powerful tool for measuring educational progress and outcomes.

4. Interview as a Core Method in Pedagogical Research

An interview is a qualitative core method in pedagogical research that involves direct communication between the researcher and participants, such as students, teachers, or school administrators. This method is used to collect in-depth information about individuals' experiences, opinions, and attitudes toward the educational process. Interviews can be conducted in different formats, including structured, semi-structured, and unstructured. In structured interviews, the researcher asks a fixed set of questions in a specific order. In semi-structured interviews, there is a general plan, but the researcher can ask additional questions depending on the responses. Unstructured interviews are more flexible and resemble natural conversations. One of the main advantages of interviews is that they provide detailed and rich data. Researchers can explore participants' thoughts more deeply and clarify answers when needed. This makes interviews especially useful for understanding complex issues such as student motivation, learning difficulties, and teaching effectiveness. Another

benefit is the opportunity for personal interaction, which can help build trust and encourage participants to share honest and meaningful responses. Interviews also allow researchers to observe non-verbal cues, such as body language and tone of voice. However, interviews also have some limitations. They can be time-consuming and require strong communication skills from the researcher. In addition, the quality of data may be influenced by the interviewer's bias or the participant's willingness to respond openly. In pedagogical research, interviews are widely used to gain deeper insights into educational experiences and to complement data collected through other methods such as surveys and tests. When conducted effectively, interviews provide valuable qualitative data that enrich research findings.

Auxiliary Methods in Pedagogical Research

Auxiliary methods are additional or supporting research techniques used in pedagogical studies to complement core methods. Unlike core methods, which collect primary data directly from participants (such as students or teachers), auxiliary methods help analyze, interpret, and validate the collected information. These methods are not usually used alone; instead, they support the main research process by providing deeper insights, improving accuracy, and strengthening the reliability of the results. Auxiliary methods help researchers examine data from different perspectives and ensure that conclusions are well-founded. Common auxiliary methods in pedagogical research include **content analysis and expert evaluation.** For example, after collecting data through surveys or interviews, a researcher may use content analysis to examine written responses or expert evaluation to confirm the validity of findings. The main advantage of auxiliary methods is that they enhance the quality and credibility of research. They allow for more comprehensive analysis and help avoid errors or bias. However, they depend on the data collected through core methods and cannot replace them.

1. **Content Analysis as an Auxiliary Method in Pedagogical Research**

Content analysis is an important auxiliary method in pedagogical research that involves examining and interpreting various types of educational materials. These materials may include textbooks, students' written works, lesson plans, audio recordings, videos, and other instructional resources. The main purpose of content analysis is to identify patterns, themes, and meanings within the content. Researchers analyze the material systematically to understand how information is presented, what ideas are emphasized, and whether there are any biases or gaps in the content. Content analysis can be both qualitative and quantitative. In qualitative content analysis, researchers focus on interpreting meanings, themes, and concepts. In quantitative content analysis, they count specific elements, such as the frequency of certain words, topics, or concepts. One of the key advantages of content analysis is that it allows researchers to study materials without directly involving participants. This makes it a non-intrusive method that does not affect the natural learning environment. It is also useful for analyzing large amounts of data over a period of time. However, content analysis also has some limitations. It may require a lot of time and effort to analyze materials carefully. In addition, the results can sometimes be influenced by the researcher's interpretation, which may lead to subjectivity. In pedagogical research, content analysis is widely used to evaluate the quality of textbooks, analyze students' written assignments, and assess the effectiveness of teaching materials. When applied properly, it provides valuable insights that support the improvement of educational content and teaching practices.

2. Expert Evaluation as an Auxiliary Method in Pedagogical Research

Expert evaluation is an important auxiliary method in pedagogical research that involves the assessment of educational materials, teaching methods, or research

findings by qualified specialists or experienced educators. These experts have deep knowledge and professional experience in the field of education, which allows them to provide informed and reliable judgments. The main purpose of expert evaluation is to ensure the quality, validity, and effectiveness of educational content and research results. Experts carefully review materials such as curricula, textbooks, lesson plans, and research conclusions to identify strengths, weaknesses, and possible improvements. Expert evaluation can be conducted individually or in groups. Sometimes researchers use a panel of experts to gather multiple opinions, which increases the reliability of the evaluation. Experts may use specific criteria or guidelines to assess the material objectively. One of the key advantages of expert evaluation is that it provides professional and authoritative feedback. This helps researchers improve their work and avoid mistakes. It is especially useful in validating research findings and ensuring that conclusions are accurate and relevant. However, expert evaluation also has some limitations. It may be influenced by the personal opinions or biases of experts. In addition, finding qualified experts and organizing the evaluation process can be time-consuming. In pedagogical research, expert evaluation is widely used to validate teaching methods, assess the quality of educational programs, and improve instructional materials. When combined with core methods, it significantly strengthens the overall research process and outcomes.

Conclusion

In conclusion, pedagogical research methods are essential tools for understanding, analyzing, and improving the educational process. They provide a systematic approach to studying how teaching and learning occur in different educational environments. Core methods such as observation, surveys, tests, and interviews play a fundamental role because they allow researchers to collect primary and direct data from real educational settings. Each of these methods contributes in a unique way:

observation helps to study real classroom behavior, surveys gather large-scale opinions and attitudes, tests measure academic achievement, and interviews provide deep and detailed insights into participants' experiences. On the other hand, auxiliary methods such as content analysis and expert evaluation strengthen the research process by adding depth, reliability, and validity to the collected data. Content analysis allows researchers to examine educational materials and identify important patterns or themes, while expert evaluation ensures that findings and materials are assessed by qualified professionals, improving the overall quality of research outcomes. Together, core and auxiliary methods complement each other and create a complete framework for pedagogical research. Core methods provide the main data, while auxiliary methods help interpret and validate that data from different perspectives. This combination makes research more accurate, objective, and scientifically reliable. Therefore, the integration of both core and auxiliary methods is crucial for producing high-quality pedagogical studies that can effectively contribute to the improvement of teaching strategies, learning processes, and educational systems in general.

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