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INDUCTIVE AND DEDUCTIVE REASONING – AS THE BASIS OF LOGICAL CONCLUSION

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ABSTRACT

The article highlights the significance of inductive and deductive thinking in the modern educational process, the need for their development, and the theoretical-methodological aspects of their application in pedagogical practice. In addition, the integration of inductive and deductive approaches in activating the cognitive activity of students and teachers is analyzed.

KEYWORDS: Inductive thinking, deductive thinking, logical reasoning, educational process, cognitive development, pedagogical methods.

INTRODUCTION

Today, the higher education system requires not only the delivery of ready-made knowledge, but also the development of students' skills in independent analysis, generalization, and the creation of new knowledge. In this process, inference, as one of the important forms of logical thinking, plays a special role. Through inference, a student gains new knowledge from existing knowledge, broadens their scientific worldview, and develops the ability to think independently.

Inductive thinking develops students' ability to observe, analyze, and generalize during the learning process. This approach is particularly significant in the field of pedagogy, since future teachers consolidate theoretical knowledge directly through practical observations. For example, a student observes different classroom processes, compares the methods used by teachers, and determines which ones are more effective in increasing student engagement. Based on this, the student arrives at general methodological conclusions that ensure lesson effectiveness. Inductive thinking allows students to build theoretical knowledge on real experience, which in turn creates the foundation for making scientifically grounded decisions in their future pedagogical activity.

Deductive thinking, on the other hand, enables the application of existing theoretical rules and principles in specific situations. In higher education, this is reflected, for instance, when the didactic "principle of consistency" is studied theoretically and then applied in planning primary school lessons. The student implements the theoretical principle in practice by designing a lesson that helps students effectively master the material. This process, in turn, strengthens the student's professional competence and shapes them into a methodologically well-prepared teacher.

The integrated application of inductive and deductive thinking in higher education develops the following skills in students:

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Deepening logical reasoning – the ability to identify causal relationships, understand general principles, and adapt them to specific situations;

Enhancing analytical approaches – the skill of systematically studying pedagogical processes, identifying strengths and weaknesses, and analyzing them on a scientific basis;

Independent decision-making – the ability to choose the most appropriate solution in specific pedagogical situations by combining theory and practice;

Development of methodological competencies – effective use of modern methods in designing the learning process and the ability to organize pedagogical activity creatively;

Readiness for innovative activity – preparedness to apply modern pedagogical technologies, test new methods, and implement them in practice.

Therefore, the integrated development of inductive and deductive thinking in the process of higher education not only strengthens the scientific-theoretical knowledge of future teachers, but also helps to shape them as competent specialists who are prepared for practice and equipped with modern approaches.

The pedagogical significance of inference. Inference is one of the most important forms of logical thinking, as it enables the generation of new knowledge based on existing knowledge. Its essence lies in connecting a student's existing knowledge consistently and forming new judgments. If there is logical correlation between judgments, the inference will be valid; otherwise, it will lead to an incorrect conclusion. For example:

Valid inference: "In every effective lesson, students are active. In the pedagogy lesson, students are actively participating. Therefore, the pedagogy lesson is effectively organized." Here, a logically consistent conclusion is derived from two judgments.

Invalid inference: "Dilshod is a student of the pedagogy faculty. Dilshod participated in a scientific conference." From these judgments, no reliable conclusion can be made, since there is no causal connection between them.

Forms of inference can be direct or indirect. Direct inferences mean that a student derives new knowledge directly from a single judgment. Indirect inferences are based on comparing two or more judgments to arrive at general knowledge. This process further deepens students' cognitive activity.

The use of inductive and deductive inferences in higher education broadens students' scope of thinking.

Inductive inference: "Several students defended independent projects in the pedagogy class. This process activated their creative abilities. Therefore, project defense is an effective method for developing creativity in all students."

This conclusion stems from students' observation and generalization abilities.

Deductive inference: "Every scientific article is based on evidence. Students' term papers are aligned with the requirements of scientific articles. Therefore, term papers must also be written on the basis of evidence."

This conclusion was derived by applying a theoretical rule in a specific situation.

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Thus, the effective use of inductive and deductive thinking expands students' scientific-analytical potential, ensures the integration of theoretical knowledge with practical activity, and thoroughly prepares them for future pedagogical work.

Developing inductive and deductive thinking in the pedagogical process is an effective means in higher education for fostering students' logical and scientific thinking, integrating theoretical knowledge with practical activity, and preparing them for professional practice. Through inductive reasoning, students arrive at general conclusions from real observations, while through deductive reasoning, they gain the opportunity to apply theoretical principles in specific situations. The integration of these approaches strengthens the theoretical-methodological foundation for developing the methodological competence of future teachers and preparing them for innovative and creative pedagogical activity.

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