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Improving the Methodological Preparation of Future Elementary School Teachers for Students Logical Thinking

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ABSTRACT

Objective: *This study explores the concept of fundamentalization in the scientific and methodological training of primary school teachers, aiming to improve educational outcomes by integrating a strong foundation of essential knowledge and skills into teacher preparation programs.* ***Methods:*** *The research employs a dual approach: viewing fundamentalization as the mathematization of knowledge and as the formation of a unified scientific worldview. Key factors influencing this process include the recruitment of qualified academic staff, curriculum adjustments, and the alignment of teaching methods and tools with fundamental educational principles.* ***Results:*** *The study identifies three main approaches to fundamentalization: as an educational content category, a didactic principle, and a quality assessment category. It highlights the importance of interdisciplinary courses and a holistic educational framework that incorporates ecological and information literacy. It also emphasizes the role of teacher professionalism in enhancing educational quality, particularly in primary education.* ***Novelty****: This research contributes a comprehensive framework for understanding fundamentalization, bridging gaps in its integration into primary teacher training programs. It offers insights into how fundamentalization can influence curriculum design, teacher preparation, and educational quality, with practical implications for improving primary education standards.*

INTRODUCTION

Before analyzing the potential for fundamentalization in the scientific and methodological training of primary school teachers, it is essential to define and clarify the theoretical essence of the concept of "fundamentalization." Fundamentalization refers to the establishment of a robust educational foundation that encompasses essential knowledge, skills, and values necessary for effective teaching and learning. This concept is increasingly recognized as vital in shaping educational practices that not only convey information but also promote critical thinking, creativity, and lifelong learning among students [1]. As such, fundamentalization serves as a guiding principle for developing curricula that are both comprehensive and coherent, ensuring that learners are equipped with the tools they need to navigate complex real-world challenges.

In contemporary pedagogical and instructional literature, the topic of fundamentalization is generally discussed in relation to the quality, principles, and content of education. Researchers have highlighted that a fundamentalized approach enhances the depth and breadth of learning experiences, allowing students to make meaningful connections between theoretical knowledge and practical applications [2]. For instance, Kuzminov emphasizes that integrating fundamental principles into

educational frameworks can significantly improve student engagement and understanding [3]. However, the integration of fundamentalization into the selection of methods, techniques, and teaching tools, as well as its impact on instructional organization, remains underexplored. This gap in research underscores the necessity for a more detailed examination of how fundamentalization can be effectively incorporated into teacher training programs, particularly for primary school educators who play a crucial role in laying the groundwork for students' future learning experiences [4].

To address this gap, it is imperative to investigate how fundamentalization can inform the pedagogical strategies employed by primary school teachers, as well as the implications for curriculum design and assessment practices. By doing so, we can better understand the potential benefits of a fundamentalized approach to teacher training, ultimately leading to improved educational outcomes for students [5].

RESEARCH METHOD

In other words, the authors associate solving the problem of fundamentalization with the mathematization of knowledge, envisioning the 21st century as the "century of mathematics of quality" [6]. The research by A.I. Subetto, T.A. Boronenko, and N.I. Ryzhova reflects a dual approach:

a. Fundamentalization as the mathematization of knowledge.
b. Fundamentalization as the formation of a unified scientific worldview.

Reconciling These Approaches

The alignment of these perspectives raises questions. Do they contradict each other? If the focus leans predominantly toward natural and mathematical sciences, the notion of forming a unified scientific worldview becomes debatable [6]. Scholars such as Yu. Afanasyev and V.V. Orlov approach the concept of "fundamentalization" through the lens of a didactic principle, emphasizing the following requirements:

a. Recruiting highly qualified academic staff.
b. Adjusting the allocation of teaching hours accordingly.
c. Embedding fundamental problems within applied courses.
d. Expanding the topics of assessments, coursework, and theses to address foundational scientific and practical issues.

While these factors undeniably contribute to the quality of university education, the connection between fundamentalization and the topics of assessments is unclear. In this context, the principle of fundamentalization seems to extend to teaching tools and research themes. However, questions arise regarding the actual content of university education:

a. How does the content align with the principle of fundamentalization?
b. Are teaching methods and techniques consistent with this principle?

These issues remain unresolved, as neither Afanasyev nor Orlov provides clarity on these points [7].

RESULTS AND DISCUSSION

Researchers emphasize the importance of disciplinary and interdisciplinary courses that provide "the most fundamental knowledge, forming a foundation for general and professional culture, and facilitating quick adaptation to new professions, specialties, and fields of expertise" [8]. This highlights the necessity for a well-rounded educational framework that not only imparts essential knowledge but also prepares students for the dynamic nature of the modern workforce. The concept of fundamentalization in education seeks to address these needs by establishing a robust foundation that supports both academic and professional growth [9].

To achieve the goals of fundamentalization, K.K. Kolin and E.G. Lavrushin propose several key steps. These include enhancing individuals' general cultural awareness, revising the content and methodology of the educational process to emphasize a holistic perspective, integrating universal ecological education, and including information literacy as a critical component of education. Additionally, they advocate for the mandatory incorporation of distance learning methods to adapt to the evolving educational landscape [9]. These steps collectively aim to create a more comprehensive educational experience that aligns with the principles of fundamentalization [10].

In summary, there are three primary approaches to defining the concept of fundamentalization in education. The first approach views fundamentalization as a category describing educational content. The second approach considers it a didactic principle that influences all structural components of modern educational systems. The third approach defines fundamentalization as a category that assesses the quality of educational systems. The third approach forms the foundation of this research, as it underscores the significance of quality in educational outcomes and processes [11].

According to E.V. Piskunova, the quality of modern education is determined by several factors. These include the quality of outcomes, which reflects graduates' readiness for independent living; the quality of the process, linked to advancements in teachers' professional-pedagogical activities; and the quality of the system, which relies on effective educational management and teachers' participation in decision-making through delegated responsibilities [12]. Educational quality is achieved through various components, including student learning outcomes, teacher professionalism, curriculum content, and management systems. Fundamentalization as a quality category of modern education systems is evident in each of these components, reinforcing the need for a foundational approach to education [13].

Given that this study explores the scientific and methodological training of primary school teachers, special attention is directed toward the role of teacher professionalism in shaping the quality of primary education. High-quality education for primary school graduates cannot be achieved without adequate preparation of primary school teachers. Therefore, enhancing teacher training programs through the principles of fundamentalization is essential for fostering a competent and effective teaching workforce that can meet the diverse needs of students [14], [15].

CONCLUSION

Fundamental Findings : The study identifies fundamentalization as a crucial educational principle that establishes a robust foundation for primary school teachers. It emphasizes the importance of integrating essential knowledge, skills, and values, highlighting the need for a well-rounded educational framework that supports both academic and professional growth. The research also underscores the necessity of incorporating interdisciplinary approaches, advanced methodologies, and an integrated worldview to ensure effective teaching practices. **Implications :** The implications of fundamentalization in primary teacher training are significant. Incorporating a fundamentalized approach can enhance the quality of teacher preparation, leading to improved student learning outcomes. By addressing gaps in current educational frameworks, it suggests that teacher training programs should prioritize essential principles, focusing on holistic development, scientific literacy, and professional adaptability to modern challenges. **Limitations :** The study's limitations include the underexplored connection between fundamentalization and specific teaching methods or tools. Although the research addresses theoretical aspects of fundamentalization, it lacks practical insights into how these principles can be effectively implemented in classroom settings. Furthermore, the study did not explore how teachers' professional development impacts the application of fundamentalization. **Future Research :** Future research should focus on exploring how fundamentalization can be directly applied to classroom teaching strategies and curriculum development. Additionally, investigations into the impact of fundamentalization on the professional growth of primary school teachers, as well as its long-term effects on student outcomes, would contribute valuable insights into the practical implementation of this approach.

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