

THE ROLE OF STUDYING THE RELATIONSHIP BETWEEN MARXIST-LENINIST PHILOSOPHY AND TECHNICAL SPECIALIZED SUBJECTS IN THE ERA OF DIGITAL TRANSFORMATION

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ABSTRACT

This article analyzes the role of studying the relationship between Marxist-Leninist philosophy and technical specialized subjects in the context of the rapidly advancing digital transformation worldwide. In the new era, where science and technology, artificial intelligence and automation have become key drivers of socio-economic development, integrating Marxist-Leninist philosophical thinking with technical reasoning holds particularly significant importance. The study indicates that Marxist-Leninist philosophy not only provides a scientific methodology and dialectical worldview that guide students' critical thinking, but also contributes to shaping professional ethics, personal character and systematic thinking for students in technical fields. Accordingly, the article emphasizes the need to innovate teaching methods, enhance interdisciplinary approaches and apply practical integration to maximize the effectiveness of Marxist-Leninist philosophy in training high-quality technical human resources for the national digital transformation process.

Keyword: *Marxist-Leninist philosophy, engineering, digital transformation, dialectical thinking, education.*

1. INTRODUCTION

In the context of the Fourth Industrial Revolution and rapid digital transformation, knowledge and technology have become key factors driving the development of all aspects of social life. Technical and technological fields are considered the pioneering forces, directly creating breakthrough changes. However, the rapid advancement of science and technology not only presents opportunities but also brings numerous challenges related to ideology, ethics and human values. In this context, Marxist-Leninist philosophy, as an ideological foundation, scientific methodology and tool for understanding the world, plays an important role in guiding the thinking, actions and social responsibility of future engineers and scientists. Studying the relationship between Marxist-Leninist philosophy and technical disciplines not only helps learners gain a deeper understanding of the nature and laws of nature, society and human thought, but also supports them in applying dialectical thinking and scientific logic to solve practical technical and technological problems. This provides an

important foundation for developing creativity, critical thinking and adaptive capacity, which are core qualities of technical human resources in the digital era. Given that higher education in Vietnam is actively innovating curricula, teaching methods and training content, exploring the relationship between Marxist-Leninist philosophy and technical disciplines is necessary to strengthen interdisciplinarity and link theory with practice. This approach maximizes the value of Marxist-Leninist philosophy in training, research and the comprehensive development of human resources. This article aims to clarify both the theoretical and practical significance of this issue and to propose several directions for enhancing the effectiveness of teaching and applying Marxist-Leninist philosophy in technical training programs in the era of digital transformation.

2. THEORETICAL BASIS FOR THE RELATIONSHIP BETWEEN MARXIST-LENINIST PHILOSOPHY AND TECHNICAL SPECIALIZED SUBJECTS

Marxist-Leninist philosophy is considered a foundational ideology, worldview and scientific

methodology for all human cognitive and practical activities. This philosophical system not only provides a theoretical basis for social sciences but also offers profound guidance for natural sciences and technical disciplines. Both philosophy and engineering share a common goal: to understand, transform the world and serve human needs.

With its dialectical materialist worldview and materialist dialectical method, Marxist-Leninist philosophy helps learners understand that all phenomena in nature, society and human thought exist in continuous interaction and motion. This theoretical foundation enables students and technical researchers to adopt a holistic perspective, avoiding fragmented or one-sided thinking when approaching technical and technological problems. Marxist-Leninist philosophy asserts that no phenomenon exists in isolation; all objects and processes are interconnected and mutually influence one another within a unified system. When applied to engineering, this principle helps learners understand the interconnections between components in a production line, the relationship between hardware, software and humans, as well as between technical performance and environmental impact.

Moreover, the principle of development in Marxist-Leninist philosophy has profound implications for innovative thinking in technical fields. It posits that development results from the struggle of opposing forces and involves the transformation of quantity into quality and vice versa. Applied to technical research and practice, learners recognize that all technological progress is the result of accumulated knowledge, experimentation, trial and error and continuous improvement. Understanding this law enables future engineers to cultivate innovative thinking, inheriting and developing existing technical achievements through dialectical analysis rather than passively accepting them.

Marxist-Leninist philosophy also plays a crucial role in fostering systemic thinking among engineering students. In the era of digital transformation, technical systems from smart grids and automated control systems to the Internet of Things (IoT) are highly integrated and interconnected. Engineers must understand how elements within a system interact, influence and constrain each other. Dialectical materialist thinking provides a logical and scientific

framework to analyze these relationships, thereby supporting the design of comprehensive, optimal and sustainable solutions.

In addition, Marxist-Leninist philosophy emphasizes the creative role of humans. All scientific and technological achievements are products of human labor and thought in interaction with nature and society. Recognizing this helps engineering students not only understand the essence of creative activity but also develop a sense of social responsibility and professional ethics. When humans master science and technology, they do not merely operate machines; they are also accountable for how these technologies affect people and the environment.

Thus, the relationship between philosophy and engineering is not only theoretical but also highly practical. Marxist-Leninist philosophy provides a foundation for scientific thinking, while technical disciplines realize and test this thinking in practice. Integrating the two fields enables learners to understand that technical development cannot be separated from the objective laws of nature and society and highlights the guiding role of philosophy in the sustainable development of science and technology.

Overall, the relationship between Marxist-Leninist philosophy and technical subjects is dialectical, unified and mutually reinforcing: philosophy offers a worldview and scientific methodology, while engineering realizes, tests and develops these values in creative practice. This forms a solid theoretical basis for constructing a comprehensive engineering education model, in which students are not only proficient in their technical expertise but also possess critical thinking, creativity and social responsibility in the era of digital transformation.

3. THE SIGNIFICANCE OF INTEGRATING MARXIST-LENINIST PHILOSOPHY WITH TECHNICAL SUBJECTS IN THE ERA OF DIGITAL TRANSFORMATION

In the era of digital transformation, where artificial intelligence (AI), the Internet of Things (IoT), big data, blockchain and automation are reshaping production, the economy and social life, integrating philosophy with engineering is not only an academic concern but also an urgent requirement for sustainable human and societal development. The rapid progress of science and technology has created unprecedented

opportunities, yet it also brings new challenges related to ethics, humanistic values and development orientation. In this context, Marxist-Leninist philosophy plays a crucial role in guiding thinking, shaping character and ensuring humanistic principles in the modernization of technical fields.

First, Marxist-Leninist philosophy helps engineering students recognize the social nature of science and technology, understanding that technology is not an independent force but a product of human creativity within specific historical and social conditions. Technical progress is essentially the development of productive forces, closely linked to practical needs and the level of human knowledge. Therefore, engineers, designers and technology managers must avoid technocratic thinking, which tends to overemphasize the role of technology and regard humans merely as tools serving machines. Recognizing this helps students understand their active role in the creative process, fostering autonomy, social responsibility and the orientation of technology development for human benefit rather than the opposite.

Second, Marxist-Leninist philosophy provides an ethical and humanistic foundation for technical applications. As digital technologies develop rapidly, emerging ethical issues, privacy concerns and social equity challenges become more prominent. These include the misuse of personal data, the use of AI for surveillance and the risk of automation replacing traditional labor. In this context, philosophical thinking equips engineers and technology managers with a comprehensive perspective, balancing economic benefits with humanistic values. Marxist-Leninist philosophy, emphasizing human emancipation and the creative role of labor, guides learners in forming professional responsibility and avoiding unethical or purely utilitarian approaches in technological research and application. In other words, philosophy serves as a guide to ensure that technical activities develop in harmony with social progress and human well-being.

Third, applying dialectical materialism in technical research and teaching is particularly meaningful for enhancing students' creative thinking, critical reasoning and problem-solving abilities. Dialectical materialism asserts that all objects and phenomena exist in interrelation, mutual influence and transformation, developing through

the struggle of opposing forces. Applied to engineering, this principle helps learners understand that all technical systems are dynamic, continuously changing and can be optimized by identifying, analyzing and addressing internal contradictions. Dialectical thinking encourages students not to merely follow instructions or apply formulas, but to ask questions, critically evaluate and seek innovative solutions to improve processes and design technologies that are better suited to Vietnam's practical conditions and global trends.

Fourth, in the digital transformation environment, Marxist-Leninist philosophy fosters systemic thinking and adaptability. With new technologies constantly emerging and interacting, engineering students must be able to view problems holistically, recognizing the interconnections among components within technical, economic and social systems. Dialectical materialist methodology provides the theoretical tools to understand not just isolated parts of an issue but the overall picture of technological development in relation to human life, the environment and social progress.

Finally, integrating Marxist-Leninist philosophy with engineering contributes to nurturing purpose-driven creativity, shaping a comprehensive technical professional who is both technically skilled and possesses theoretical reasoning, professional ethics and social responsibility. In the digital era, where the line between humans and machines is increasingly blurred, the human factor, with its reasoning, emotions and humanistic values, becomes even more critical. Marxist-Leninist philosophy, with its scientific and profoundly humanistic spirit, provides the foundation for guiding sustainable, equitable and socially beneficial technical development.

Overall, integrating Marxist-Leninist philosophy with technical subjects in the era of digital transformation enables learners not only to know how to act, but also to understand why they act, for whom they act and what purpose their actions serve. This integration embodies the profound and lasting value of combining philosophy, science, technology and human development in contemporary Vietnamese higher education.

4. DIRECTIONS FOR INNOVATING INTERDISCIPLINARY TEACHING AND RESEARCH METHODS

To further enhance the role of Marxist-Leninist philosophy in technical education, innovating teaching content and methods is essential. This will help learners apply philosophical thinking to practical engineering and technological challenges. In the context of higher education strongly influenced by digital transformation, interdisciplinary and multidisciplinary trends and lifelong learning, training institutions need a comprehensive innovation strategy that ensures scientific rigor while enhancing practicality, creativity and interaction.

First, the content of Marxist-Leninist philosophy courses should be renewed to closely relate to the practical realities of technical fields. Instead of merely conveying abstract concepts, principles and categories, instructors should connect philosophical theory with concrete examples from engineering and technology. For instance, the law of “contradiction” can be illustrated in technological innovation processes; the principle of “quantitative to qualitative transformation” can be applied in technical improvements; and the law of the “negation of the negation” can be explained through the development of machinery generations and automated systems. Linking philosophical thinking with engineering practice helps students understand that philosophy is not divorced from reality, but serves as a cognitive tool enabling them to analyze, understand and solve technological problems scientifically and creatively.

Second, active learning methods should be strengthened to encourage students to engage with philosophical knowledge and apply it in their technical fields. Methods such as group discussions, case analysis, project-based learning and simulation-based learning should be widely implemented. For example, engineering students could investigate real-life scenarios such as “the conflict between automation and human labor” or “environmental impacts of new energy technologies,” using Marxist-Leninist principles to analyze the essence of the problem and propose reasonable solutions. This approach not only develops critical thinking and problem-solving skills but also fosters the ability to connect theoretical reasoning with practical action, a

crucial competence for engineers in the era of Industry 4.0.

Third, interdisciplinary research between philosophy and engineering faculty should be promoted. Collaborative research can help build integrated learning modules that reflect the relationship between technology and philosophical thinking in a contemporary context. For example, interdisciplinary topics could include “Philosophical Implications of Artificial Intelligence on Human Labor,” “Dialectical Thinking in the Design of Intelligent Technical Systems,” or “Philosophical Perspectives on Sustainable Development in Environmental Engineering.” Such research results not only enrich teaching content but also foster a culture of interdisciplinary scholarship, where philosophy and engineering interact and complement each other in cognition and creativity.

Fourth, digital transformation should be fully utilized in teaching Marxist-Leninist philosophy. Using learning management systems (LMS), e-learning, 3D simulations and artificial intelligence in instruction can make philosophical knowledge more vivid, intuitive and engaging for students. For instance, philosophical laws can be illustrated through technology models that simulate the movement and development of technical systems, making concepts easier to understand and remember. Digital technology also supports instructors in personalizing learning, assessing student competencies organizing virtual interactive classes and creating philosophy-technology discussion forums, thereby establishing an open, flexible and modern learning environment.

Fifth, it is necessary to develop philosophy instructors’ knowledge of technology and modern pedagogical skills. Instructors must not only have a deep understanding of Marxist-Leninist philosophy but also be capable of connecting philosophy with the realities of science and engineering. They should stay updated on emerging trends such as artificial intelligence, digital technology, clean energy and automation engineering. Organizing training courses, workshops and interdisciplinary seminars between philosophy and engineering faculty will improve professional competence and build a bridge of knowledge between the two fields.

Sixth, universities should foster an interdisciplinary and creative academic environment. Marxist-Leninist philosophy should not exist merely as a foundational subject but should become an integral part of the professional mindset of engineering students. Organizing academic forums, debates or student research conferences that combine philosophy and technology can stimulate interest and help students recognize the practical and dynamic value of philosophy in their professional lives.

5. CONCLUSION

In the context of digital transformation and the Fourth Industrial Revolution, the relationship between Marxist-Leninist philosophy and technical disciplines has become increasingly significant, both theoretically and practically. The rapid advancement of science and technology brings unprecedented opportunities for societal progress, but it also presents new challenges related to cognition, ethics and human values. In this context, Marxist-Leninist philosophy, with its dialectical materialist worldview and scientific methodology, continues to play a guiding role in shaping the thinking and actions of individuals, particularly young intellectuals and engineers who are directly building the technological foundations of the future.

Integrating Marxist-Leninist philosophy with technical disciplines not only helps students gain a deeper understanding of the nature, laws and inevitability of technological development, but also fosters critical thinking, systems thinking and creative problem-solving abilities in their professional work. More importantly, philosophy enables learners to recognize that technology must serve humanity, develop for human benefit and be closely associated with social responsibility. This is a core factor ensuring the development of science and technology in a human-centered, sustainable manner that aligns with national development goals in the modern era.

To maximize the effectiveness of this integration, technical training institutions need to innovate teaching content, methods and approaches for Marxist-Leninist philosophy courses, linking philosophical theory closely with professional practice, promoting interdisciplinary research and actively applying digital technology in teaching and learning. Developing a faculty capable of

connecting philosophical knowledge with technical expertise, along with creating an open, interactive and creative learning environment, is a prerequisite for achieving this goal. In summary, Marxist-Leninist philosophy is not only the ideological foundation of social sciences but also a guiding framework for the development of modern science and technology. When closely integrated with technical disciplines, philosophy fully realizes its role in guiding cognition, cultivating character and fostering creativity and social responsibility among students. This approach lays the foundation for building comprehensive technical human resources who are equipped with knowledge, skills, scientific reasoning, ideals and humanistic values, meeting the demands of digital transformation and sustainable development in Vietnam in the twenty-first century.

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