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Development and Standardization of Terminology Across Scientific Disciplines

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Abstract: This article analyzes the process of forming terminological systems across different fields of knowledge, focusing on its fundamental principles and stages of development. Terms constitute a vital element of scientific and practical activity, and their systematization is closely related to scientific and technological progress, linguistic characteristics, historical and cultural factors, and processes of international integration. The article also explores the specifics of terminology formation in science, technology, economics, medicine, law, and politics. It argues that the development and standardization of terminology is a crucial process for advancing scientific thinking and organizing effective international scientific dialogue.

Keywords: Terminology, science and technology, economics, medicine, law, politics, standardization, scientific language, terminology system.

Introduction: The development of any scientific or applied discipline requires a clear, comprehensible, and systematized terminological apparatus. Terms are one of the most essential components of science, technology, economics, and culture, and their proper formation significantly enhances the efficiency of research and practical activities. This article examines the formation of terminological systems in various domains of knowledge, highlighting their underlying

principles and developmental processes.

Terminology refers to the collection of specialized terms used within a specific science or field. Each term represents a distinct concept or process, thus clarity and comprehensibility are vital. The process of terminology formation is influenced by the following factors:

1. Language and linguistic features – Each language has its own grammatical and lexical structure, which directly affects the formation of terms.

2. Scientific and technological progress – New technologies and discoveries lead to the emergence of new terms.

3. Historical and cultural factors – Scientific thinking and the historical context of a nation influence its system of terms.

4. International integration – Scientific terms in different languages interact and are sometimes assimilated with one another.

METHOD

Formation of Terminology in Various Fields

Terminology in Science and Technology

The field of science and technology is one of the fastest growing, and new terms appear most frequently. For example, in the areas of computer science and artificial intelligence, terms such as “algorithm,” “neural network,” and “quantum computer” are widely used. Although these terms were initially coined in foreign languages, their equivalents in Uzbek are still being developed.

Main methods of term formation in technical fields include:

- **Calquing** – a direct translation of a foreign word (e.g., “computer network”);

- **Transliteration and transcription** – adoption of foreign terms with similar pronunciation (e.g., the word “scanner” is used in Uzbek without alteration);

- **Creating an alternative term** – forming new terms using existing native words (e.g., “artificial intelligence” is adopted into Uzbek with an equivalent term).

Economics and Business Terminology

Modern economics and business also generate many new terms. For example, terms like “marketing,” “investment,” “startup,” and “capital” are used internationally and are often adopted in similar form in the Uzbek language.

Key principles in the formation of economic terminology include:

- **Clarity and conciseness** – terms should be as specific and brief as possible;

- **Universality** – consistency with international terminology;

- **Compliance with lexical features of the Uzbek language** – creation of terms in a manner compatible with the national language.

For instance, the terms “inflation” and “deflation” are used in Uzbek as-is, due to the absence of simpler explanatory alternatives.

Terminology in Medicine and Biology

Most medical and biological terms are derived from Latin and Greek. For example, terms such as “oncology,” “cardiology,” and “orthopedics” are widely used on an international scale.

Terminology in Law and Politics

Although terms like “democracy” or “authoritarianism” are understood globally, each country adapts them to its own legal and political framework.

Science is a system of knowledge about the world that is continuously developing and deepening. A clear and precise language is essential for the effective functioning and communication of scientific knowledge. The formation of terminological systems in various fields of knowledge is a complex and lengthy process that reflects the evolution of scientific thought and its integration into the social context. This process includes not only the creation of new terms but also their refinement, standardization, and constant updating in line with new discoveries and achievements.

The earliest scientific terms often emerged from everyday language through reinterpretation of words and expressions. However, with the advancement of science, simple reinterpretation proved insufficient. The need for precise definitions led to the development of specialized terminological systems, which include not only individual words but also phrases and expressions. This process is characterized by efforts to unify terminology, eliminate synonyms, and establish a clear and comprehensible system of concepts.

The formation of terminological systems varies across disciplines. In well-established sciences such as mathematics and physics, terminology tends to be stable and highly formalized. New terms are introduced rarely and follow strict guidelines. Conversely, in rapidly evolving fields like information technology or bioengineering, terminology is constantly changing. The emergence of new technologies and discoveries necessitates the creation of new terms and the revision of existing ones. This process can be chaotic, making the standardization of terminology especially important.

CONCLUSION

In conclusion, the formation of terminological systems in various fields of knowledge is a continuous process closely tied to scientific and technological progress. It is a dynamic system that adapts to new discoveries while striving for precision, accuracy, and integration. Only through ongoing refinement of terminology can scientific knowledge be effectively communicated, promoted, and contribute to the advancement of humanity. The role of specialized organizations and committees in this process is crucial, as they establish standards and ensure the accuracy of scientific communication.

The formation of terminological systems is a long and complex process influenced by linguistic, scientific, technological, and cultural factors. The proper development and systematization of terms impacts the advancement of scientific thinking, the popularization of science and technology, and the efficiency of expert communication.

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