European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2022.11.20

SCTCMG 2022
International Scientific Conference «Social and Cultural Transformations in the Context of Modern Globalism»

REFLECTION ON DEVELOPMENT OF SCIENTIFIC-EDUCATIONAL KNOWLEDGE AND TERMINOLOGY

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Abstract

The authors attempt identifying features in formation and development of scientific and educational knowledge as a gnoseologic category from the point of view of the ontological approach in both synchrony and diachrony, thus opening a possibility to determine ontological attributes, properties, structure of cognition, foundation of thought development in a subject. The authors distinguish between scientific cognition and educational cognition. Applying methodological optics, reflecting heterogeneous context and varying socio-cultural environment of the subject of a modern education, the authors provide philosophical justifications for appearance of scientific and educational cognition, bringing to lite conceptual and connotation-related features of concepts, systematize the sphere of application of the knowledge through the lens of the subject's mental state on the basis of specific and modified general knowledge, both generalized and obtained from personal experience. The paper describes principal factors that determine reinterpretation of the education and personal development as phenomena in the scientific thesaurus of Russian and foreign educational science; the role of personal existential experience in the context of social personality development is emphasized. Making accents on hermeneutic content of educational terms reflecting the permanent process of subjective spiritual activity allows understanding these terms as a universal environment for designation of a holographic spectrum of phenomena in pedagogical science. Development of terminology is seen as an interaction during which new thought forms arise and then adapted to a linguistic system.

Keywords: Cognitive practice, hermeneutics, scientific educational knowledge, terminology

https://doi.org/10.15405/epsbs.2022.11.20
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1. Introduction

Modern global processes in economics and social sphere are having their influence on various sciences, including those pertaining to humanities. Various national schools of thought turned their scholarly attention to understanding of ontological and epistemological nature of knowledge. The notion that knowledge is a complex philosophical category is supported by a wide range of its definitions.

Knowledge is possession of experience and understanding which are correct both subjectively and objectively, and which may be used as a foundation for construction of judgments and conclusions appearing robust enough to be seen as knowledge (Shpet, 2005).

Austrian and English schools of philosophy and sociology hold the opinion that knowledge is a state of consciousness, a mental state, an objective state of thinking (Popper, 2012). German anthropology, philosophy, sociology hold that knowledge is participation in specific existence of being, a prerequisite to which is participation that transcends genuine being (Scheler, 2011). Russian scholars are of an opinion that knowledge is a form of existence and systematization of results of human cognitive activity. An invariant feature of educational knowledge is analysis of relations between educational means and educational goals (Lyz, 2014).

Specification and modification of general knowledge generalized and developed through personal experience of a practicing educator who uses trivial and practical cognition for constructing their models may serve as a foundation for development of scientific knowledge. The subject obtains knowledge to understand current developments. The process of understanding is performed because the subject encroaches upon the sphere of the object and transport it into their own sphere. Broadly speaking, to understand means to perceive.

Let us take a look at a category of cognition in the context of this paper. Theory of cognition was developed by Kant (2012) who held that cognition is assimilation of sensual perception of experience with the aim of finding the truth. Cognition may be untrue (formal, abstract); true (substantial, specific); it may contain an experience-supported assessment. At that, experience is understood as a total of everything happening with the person in their life and what the person is aware of. From one's experience, a human being may generate a notion of self, of thoughts, ideas, and knowledge.

2. Problem Statement

The modern situation in reflection of scientific and educational knowledge may be illustrated with a paradox of information deficit with respect to objective laws of its formation and development of a conceptual framework of the educational science. In order to overcome this phenomenon, researchers need to resolve a number of objectives:

1) to give considerations to ontological attributes in formation of scientific knowledge and knowledge as a whole;
2) to identify criteria of scientific and educational knowledge;
3) to determine the properties of the concepts and to provide their principal characteristics;
4) to describe the leading forms and functions of cognition;
5) to expand the main scenarios of development for the modern educational terminology.

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Let us turn our attention to a more detailed study of the phenomenon. Cognition is a subject matter in a number of humanities: philosophy, educational science, cultural studies, cognitive psychology, linguistics, etc. Gnoseology identifies various forms and types of cognition: scientific and non-scientific, reflective and non-reflective, sense-based and rational, intuitive and logical, etc.

In the line of the selected topic, scientific and educational cognition are of special interest. In education, scientific cognition is studied with the help of various approached: phenomenological, systemic, epistemological, as well as the essential ontological approach that the authors have chosen due to its universal nature, which may help expand forms and methods of educational reality cognition.

Scientific cognition is a special kind of cognitive activity aimed at development of new systematized objective knowledge, a process by which logic of being (essence, laws) transition to the logic of thought and new knowledge is obtained (Nikolaeva, 2014).

In accordance with the stated objectives, let us consider scientific and educational cognition.

Scientific cognition. Demarcation criteria: novelty, systematic nature, objectiveness, ontological attribute: closure; characteristics of concepts: originality, objectivity; properties: gnoseological conversion of concepts, constitution of the range of a science; form of cognition: laws, concepts, theories; function: concentration and substantial production of subject matter knowledge. Educational cognition. Demarcation criteria: 1) presence of a certain amount of subjectivity; 2) a result of transformation of reality contemporary to the subject. Ontological attribute: vagueness of constructs and statements; concept characteristics: specific discourse; properties: lack of completeness, unambiguity, acknowledgment; form of cognition: ideas, hypotheses, concepts, facts; function: production and transmission of subject matter knowledge.

It is evident that the two kinds of cognition differ in certain parameters, but are not antagonistic, as together they organically complement one another, allowing us to turn our attention to studying terminology as an area of scientific and educational knowledge.

3. Research Questions

Studies of vocabulary that entrenched in scientific and educational thesaurus will be undertaken in accordance with the strategy that sees terminology as a set of special signs used in educational science (Alzaid, 2017).

A modern researcher studying pedagogical education meets a terminology that implies a holographic nature of concept connotations. To reflect the exponentially growing volume of information coming from various global sources, a modern scholar needs a specific understanding of areas of both scientific and educational knowledge in order to:

i. correctly interpret obtained results;
ii. have a resultant effect due to the subject's involvement in intellectual activity;
iii. develop personal scientific capabilities thanks to realization of its heuristic dynamics (Gibson et al., 2018).

Concepts and terms rising in the educational science are, to a certain degree a form of thought, a product of social development, reflecting the science's history and life. Vocabulary of terms reflects a conceptual system of a certain science, discipline, school of thought (Wiena Circle, Jena Romanticism,

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etc.). A term is first of all a name, that is a designation for an object of a thought, and only second it is a concept. Various foreign researchers such as Humboldt (2019), Schlegel (2015), Rorty (2017), Derrida (2007) saw language as a separate spiritual world connecting a person to the environment, which allowed a term to identify conditions and ways in which a subject of co-gnition is being turned into an object thereof, thus, with a certain degree of conditionality one could argue that the term reflects spiritual distinctiveness of a people as well.

Modern Russian researchers note dialectic mutual influence between linguistic and mental categories (Bykasova et al., 2019). German researchers take their attention more to the hermeneutic connotations of educational terms, thus allowing understanding them as a universal environment for interpretation of a certain phenomenon (Lange et al., 2020). A term, according to German scholars, is not a "product of scientific analysis", but rather a permanent process of mental activity.

Today, one may note that term-creating activity of scholars is quite high. It is related to the following

1) there is a need for new definitions of established terms;

2) a subjective assessment element is being introduced by a researcher into construction of a humanities discipline;

3) fuzzy logic elements are introduced when a new term arises.

It is known that fuzzy logic-based terminology systems serve as a model for approximate reasoning and deduction. According to L.S. Bernstein, it manifests in an inability to provide a separate term with a non-ambiguous definition in the context of humanities, due to heterogeneous context and socio-cultural environment (Bernstein, 2001).

The educational term's denotation develops gradually and depends on a number of factors:

1) historical time (first schools – "tablet-houses", with their heads named "father"),

2) economic conditions (guild schools),

3) cultural preferences (trivium, quadrivium),

4) the state of development of a concept (canon law, civil law),

5) ideas (corporation, management, instrumentalism, method, principle, mentoring education) (Boguslavsky, 2008).

4. Purpose of the Study

The purpose of this paper is to give a characteristic of modern scientific and educational knowledge on the basis of analysis of types and forms, as well as development vector of methodology and systematization criteria.

For a researcher, it is important to identify epistemological foundations of scientific and educational knowledge; ways of establishment and development of principal educational terms in their historical and social aspects, as it allows avoiding creating unnecessary calques and facilitates development of general recommendations with the aim of

i. Subordinating to existing of use and boundaries of application concerning these terms;

ii. Ordering the system of educational terms and concepts.

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For example, Austrian school of thought supports using the term education instead of cognition in the context of scientific knowledge (Weinlich, 2020). According to Austrian scholars, education is a principal act in human evolution (Husserl, 2008). Influence of society onto personal development is important for formation of its civic stance, reference points necessary for overcoming social turbulence, responsible attitude to the world around us. All this, according to canons formulated by Austrian school of philosophy, is attained through the following aspects of education:

1 Acceptance of norms and rules existing in a society;

2 Searching for and finding the meaning of one's existence;

3 Interaction with other members of the society (Stainer, 2013).

Austrian philosopher F. Brentano had demonstratively shown independence of the Austrian philosophical tradition that had its pinnacle with logical empiricism, which is a theoretical cognitive and methodological program (set to critical analysis of language) based on the logical analysis of language (Brentano, 2018).

Humanistic understanding of mentoring (processes, planning, development of mentoring activities) lies, according to the Russian school of thought in value-meaning transformation of mentoring subjects through a dialog-based process of mentoring, in assisting the subject in their social self-determination (Bezrukova, 2007). Education is among the means of translation of social experience and is usually seen as an element of social culture and understood as a formalized education (Borytko et al., 2007). Education is an object of pedagogics, while its object is subject matter is regularities in educational activities (Mardakhaev, 2016).

Historically, German educational science focuses on formal education, perceiving language as a universal environment where understanding through interpretation takes place (Gadamer, 2007). Humboldt (2019) followed the same idea and held that language is a specific "energy", a means for discovering a "new truth".

Modern German scholars think that characteristics of language include its universality, epistemological foundation, and phenomenon interpretation (decoding) level. Historically, this tradition traces its origins back to I. Kant, who stated that speech of a scholar is a "social art" (Kant, 2012). From the above, we may note that mutual influence between educational science and practice for one part and modern integration processes and mutual influence of cultures for the other part does not mean a total copying of terminology used in the educational science.

5. Research Methods

In order to reflect educational-scientific knowledge and terminology, the authors employ a number of methods: general scientific methods of concept analysis and synthesis, sociological method, systemic and inductive approaches. However, the principal method of study is the prognostic method applied to development of educational-scientific knowledge, appearance and successful functioning of terminology, study of its non-conflicting existence within the system of humanities, thus allowing researchers to

1) identify specific features of terminology in humanities;
2) reveal developmental conditions of educational terminology;

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3) describe a universal model for educational-scientific knowledge fit for new conditions of the 21st century.

6. Findings

Development of terminology is as an interaction during which new thought forms arise and then are adapted to a linguistic system. In the modern digital world, interaction is appearance of information markers that stimulate development of brain limbic system and appearance of new terms in the educational-scientific knowledge (Abraham, 2020).

The phenomenon of interaction is important for us in the light of the stated problem of linguistic translation of terms. Translation reflects translator's interpretation (Dilthey, 2004). Translating the same text in the early 20th century and in the early 21st century, we are not being translating it to one and the same language. Expectedly, educational science and practice undergo development, new technologies appear as do new forms of learning, a need arises to manage educational systems, their regulatory and legal support systems, etc. The Table 1 represents the structure of interactions in detail.

Table 1. Structure of an interaction

N	The interaction subject	Reference	Paradigm
1	social level	environment	distance in relations with each other
2	interpersonal level	society	relations with each other
3	intrapersonal level	subjective internal world	my relations with myself

Interaction influences translation of the term to a different languag, as it is an anthropological constant of human being and a condition for cognition in the educational science (Straub et al., 2020). The constant with which scientific knowledge may be included, excludes language games, save for the denotation game. In this case, denotation is not that much a linguistic component, but rather evaluation of truthfulness, supposing verification of falsification of a scientist's utterance. A scientific utterance contains diachronic temporality of the past and the future, that is, accumulation of available information in memory and study of new information (Tham & Werner, 2005).

7. Conclusion

Research outlined in this paper allowed us to state the following:

1 Economic and political well-being of a country, successful existence of a society, formation and development of epistemological potential of the scientific-educational knowledge that provides empirical funding of didactic patterns allows for a reflection over the state of terminological base as a component of the educational science and for predictions on its subsequent development;

2 Modern scientific-educational knowledge is characterized with understanding of reality in its past, present and future, reflection of reality in logical concepts and categories. Scientific-educational knowledge is rational knowledge supported with theories and laws;

3 Philosophy develops certain universal models of reality, through the optics of which a researcher is looking at the object of their research, selects common cognitive means. Gnoseology and

phenomenology, being the principal development vectors in methodology of the scientific-educational knowledge facilitate development of the main criteria in development of such knowledge: objectivity, justifiability, conclusiveness, verifiability;

4 Specifics of humanities finds reflection in relevant terminologies. Terms used in humanities are characterized with polysemy and synonymy. A specific feature of educational terminology is a lack of clean definitions in its categorical set.

5 Development of educational terminology is undergoing under the influence of a number of conditions: political economic, socio-cultural ones, that determine the state of theory and practice at various historical development stages;

6 Among factors that influence formation of terminology there are demographic situation, social structure of a society, cultural and linguistic feature of a country;

7 Scholars aspire to reflect on mechanisms of cognition which is seen as a synthesis of cognitive practices, bring together attempts in search of a new concept system meeting the requirements of the modern existential and anthropological discourse of the educational science, which is represented by heterogeneous content and needs a revision of its system of categories, as due to internal evolution and socio-cultural changes, definitions are either non-matching or are provided with a specific meaning determined by semantic connotation of a concept.

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