

Technological Aspect of Terminological Training of Professional Workers

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This paper deals with the content-process and the result components of terminological training of specialists. We specified the notion of terminological training of professional workers as a gradual formation of genetic and complementary result components: (1) terminological literacy, (2) terminological competence, and (3) terminological culture. We separated three directions of terminological training: (1) informational (learning terminology of the field of studies); (2) practical (learning the methods of applying terminology for solving various tasks); and (3) reflective (developing motivation for learning terminology during continuous self-learning). Moreover, the study demonstrates how digital technologies can be used for effective terminological training in education. We developed a technology of terminological training that includes three stages of scaffolding (demonstration, guided practice, and independent practice) that correspond to the constituents of the result component (informational, practical, and reflective). The scientific novelty of this study lies in the use of scaffolding in terminological training within education. As a result of these interactions, students should be able to master terminological literacy, terminological competence, and terminological culture.

Keywords: terminological training, terminological literacy, terminological competence, terminological culture, instructional scaffolding, pedagogical support, subject -to-subject interaction

INTRODUCTION

Mastery of professional language is one of the main indicators of professional training quality. Terminology has different functions at different stages of training. In the first stage of training, it serves to

acquire new knowledge and to form a scientific understanding of the world. In the further stages of training and during professional practice, terminology facilitates professional communication and interaction. Moreover, every professional worker, at some point, realizes that their terminological knowledge is lacking (Shidlovskaya, 2019) and that the terminology is dynamic and actively changing (Mozgovoi, Abrosimova & Kononov, 2019). However, the overall quality of terminological training is constantly decreasing (Murashko, 2013; Musokhranova, Orlyanskaya & Nesterova, 2019). This is mainly caused by the fragmentation of teaching specialized and general subjects, the lack of interdisciplinary links in the terminology of different subjects, and low motivation for self-learning.

The studies of T. A. Artyushkina, E. G. Skibitsky, Bordovskaya & Koshkina (Bordovskaya & Koshkina, 2016a; 2016b), E. Jata (2018), Zh. E. Ermolaeva (2014), E. A. Koshkina, M.B. Musokhranova (Musokhranova et al., 2019), M. A. Tikhomirova (2017), Sokolova (2014), Shidlovskaya (2019) and other authors dwell on theoretical and practical aspects of terminological training in higher education institutions.

The works of N. V. Bordovskaya and E. A. Koshkina focused on the methodology of studying terminological competence. They identified and described the characteristic features of terminological competence, clarified its content and functions, and developed a structural-functional model (Bordovskaya & Koshkina, 2016a, 2016b). The dissertation of M. A. Tikhomirova focuses on the motivation facet of developing the terminological competence of students in *schools of education*, namely the psychological factors of learning didactic terminology (Tikhomirova, 2017).

The work of E. Jata studied the needs of students and the difficulties they face in learning professional terminology. In the paper, she gave recommendations for using the communicative approach and different types of terminological training tasks (Jata, 2018). E. A. Zueva and Z. Kralova studied intercultural differences in the professional vocabulary of native and foreign languages (Zueva & Kralova, 2019).

The studies that analyze the innovative technologies for teaching terminology to university students are especially important to solve terminological training issues. For example, N. V. Bordovskaya, E. A. Koshkina, M. A. Tikhomirova, and N. Bochkina proved the effectiveness of the case method in assessing and improving the terminological competence of students in *schools of education*. E. Ya. Sokolova substantiated the need for creating a terminological vocabulary as a foundation of terminological literacy (Sokolova, 2014).

Moreover, some scholars researched the innovative technologies for the development of “soft” skills that facilitate learning of professional terminology (Kulamikhina, Esmurzaeva, Marus & Zhbikovskaya, 2019; Kulamikhina, Esmurzaeva, Marus & Zakotnova, 2020); as well as the implementation of project technologies for this purpose via the integration of major subjects with humanities (Alipichev & Takanova, 2020).

The analysis of scholarly literature allowed us to conclude that the systemic features of terminological training are understudied. In this study, we examined the contents, process, and results of terminological training of professional workers. Moreover, we tried to develop a multi-level technology of terminological training.

This study aims to substantiate and develop the content and the technology of terminological training. To achieve the aim, we undertook several tasks:

- Specifying the term *terminological training of professional workers*;
- Describing the result components of terminological training;
- Developing the content of terminological training;
- Developing the technology aimed at the terminological training of professional workers.

MATERIALS AND METHODS

In this study, we used Russian and foreign pedagogic, methodical, and linguistic studies (Bordovskaya & Koshkina, 2016a, 2016b; Bordovskaya et al., 2018; Ermolaeva, 2014; Jata, 2018; Murashko, 2013; Musokhranova et al., 2019; Shidlovskaya, 2019; Sokolova, 2014; Zueva & Kralova, 2019) that dwell on the issues of terminological training in post-secondary education. We analyzed secondary literature on the

technologization of education, the interaction of main areas of education, and the management and self – management of education. We paid close attention to the terms: (1) “terminological potential”, (2) “terminological literacy”, (3) “terminological competence”, (4) “terminological culture”, (5) “terminological apparatus”; (6) instructional scaffolding; (7) “pedagogic support”; (8) “subject-to-subject interaction”.

The study is based on systemic and personal-activity approaches. The most methodologically-important scholarly ideas for this study are:

- Concept of the dialectical unity of learning and self-learning,
- Theoretical provisions on the content of specialist terminological competence,
- Structural-functional model of terminological competency of a professional worker (Bordovskaya & Koshkina, 2016),
- Continuity of educational outcomes in the process of personality formation (Gershunsky, 1998),
- Student self – organization in post-secondary education (Gromkova, 1995),
- Theory of instructional scaffolding as dynamic pedagogic support (D. Wood & H. Wood, 1996).

RESULTS AND DISCUSSION

In the studies on *terminological training*, one could encounter similar terms: “terminological potential,” “terminological knowledge,” “terminological literacy,” “terminological competence,” “terminological culture.” Frequently, scholars deem them interchangeable or assign them similar meanings. However, some scholars separate them and give each term its own interpretation (Bordovskaya & Koshkina, 2016b; Ermolaeva, 2014; Tikhomirova, 2017). According to Zh. E. Ermolaeva, *terminological knowledge* is an initial stage of the *terminological potential* development. In contrast, *terminological competence* is an “integral characteristic of the business and personal qualities of a professional worker, reflecting not only the knowledge, skills, and experience, sufficient for achieving the goals of professional activity, but also the socio – moral position of a person” (Ermolaeva, 2014). N. V. Bordovskaya and E. A. Koshkina note that the development of *terminological competence* requires lexical – terminological and professional – linguistic practical lessons in post – secondary education and in independent professional activities (Bordovskaya & Koshkina, 2016a).

Basing on the ideas about the continuity of educational outcomes in the process of personality formation, expressed as *literacy, education, professional competence, culture, mentality* (Gershunsky, 1998), we identified the following resultative components of *terminological training*: terminological literacy, terminological competence, terminological culture.

In this study, we view *terminological literacy* as an initial stage of *terminological training*. We define it as the ability to distinguish, understand, and correctly use professional terminology to solve educational tasks and communicate in the context of education. The next stage is the level of *terminological competency* – the ability and readiness to use the terminology correctly when solving professional tasks and in the process of professional communication (Bordovskaya & Koshkina, 2016b). *Terminological culture* is the mastery of terminology that allows to use it in professional activities, taking into account the preparedness of the audience, as well as the ability to use terms accurately and fluently in scientific, professional, and everyday communication. It serves as the final stage of *terminological training* (Ermolaeva, 2014).

Accordingly, *terminological training* is an organized process of forming the terminological vocabulary and its practical application in solving educational, professional, and scientific problems with a dynamic result, accompanied by the development of professional workers’ motivation for continuous self – learning and improvement of professional language.

The content structure of the result components is similar. In this study, the theoretical basis for developing the structure of result components is formed by the content and model of terminological

competency, developed by N. V. Bordovskaya and E. A. Koshkina (2016a, 2016b). In this structure, we separate three inter-related constituents: informational, practical, and reflective.

The *informational constituent* includes active terminological vocabulary that forms the terminological apparatus of a student.

The *practical constituent* is represented by the ability to use terminology in solving educational, professional, and scientific problems of communicative situations.

The *reflective constituent* combines the practical experience of applying terminology in educational, professional, and scientific situations; the need for learning new terms; and the attitude of students towards professional development and self-learning.

Based on the studies of N. V. Bordovskaya and E. A. Koshkina, we identified the indicators of the constituent manifestation.

The indicators of the *informational constituent* are:

- Ability to identify and understand terms of the professional, educational, and scientific field;
- Knowledge of term formation methods;
- Ability to form connections between terms, to systematize and classify them.

The indicators of the *practical constituent* are:

- Ability to use professional terminology accurately in their own professional communication;
- Ability to identify and understand the meanings of terms in professional speech, professional texts, and in the field of science;
- Ability to classify terms for systematizing professionally-important information.

The indicators of the *reflective constituent* are:

- Understanding the correctness or issues of using special terminology in educational, professional, or scientific communication;
- Need for using information resources and special literature in working with new terms;
- Motivation for professional development via mastering the terminology.

Content structure is typical for all result components. However, it has some evident qualitative and quantitative differences. The structure of *technological competence* is mainly identical to the structure of *terminological literacy*, but the structures are “filled” with vastly different content. *Terminological competence* presupposes an intensified use of *practical constituent*. This can be achieved via broad terminological and professional-communicative practice in post-secondary education and self-learning during professional practice. *Terminological culture*, as the pinnacle of *terminological literacy* and *competence*, features a highly motivated desire for continuous professional self-education and development.

The effectiveness of *terminological training* is determined by its ability to be used in *instructional scaffolding*. The term “instructional scaffolding” denotes temporary pedagogical support to students aimed at developing the skills of independent problem solving (Belland, 2014; D. Wood & H. Wood, 1996). Scaffolding is well-suited for *terminological training* due to the following:

- It presupposes a gradual transition to the independent studies of a student (Lepper, Drake & O'Donnell-Johnson., 1997; Tabak, 2004; Van de Pol, Volman, & Beishuizen, 2010; Van de Pol, Volman, Oort, & Beishuizen, 2015). Via implementing *instructional scaffolding*, an educator can unlock their full potential and develop their own professional independence (reinforcing their role of a subject in education) (Kubrushko & Nazarova, 2013; Kucirkova, Alipichev, Vasbieva & Kalugina, 2017). At the same time, students get an opportunity to make conscious choices about their self-improvement, becoming independent actors (subjects) in education (Gromkova, 1995; Shishov et al., 2018). Therefore, the most important feature of *scaffolding* is the subject-to-subject interactions of an educator and a student.
- *Scaffolding* is highly adaptive. It allows the teacher to increase (Koedinger et al., 2007) or decrease (Pea, 2004) pedagogical support, taking into account the needs of students, which contributes to their dynamic development.

- Continuous assessment of students' achievements in *scaffolding* (Tzurriel, 2000; Van de Pol et al., 2015) allows for timely identification of their achievements or struggles, which facilitates the changes in pedagogical support (content, forms, and methods of education) (Belland, 2017).
- In scaffolding, an educator can combine pedagogical support forms (educator-to-student and student-to-student) (Belland, 2017). This allows providing tailor-made pedagogical support, depending on the needs and results of a student.

We identified three stages of the gradual transition to independent studies within the framework of *scaffolding*:

- Demonstration;
- Guided practice;
- Independent practice.

The goal of the *demonstration* stage is to provide students with a complete picture of the education results. Students should understand the exact volume of terminology they have to know and the practical skills they have to master to use the terminology. At this stage, an educator “broadcasts” new terms and skills. The task of an educator is to (1) determine the needs of students in the training material, (2) use the existing terminological knowledge and skills, and (3) develop the presentation form of the terminological material. The task of a student is to (1) understand their own needs and (2) learn the demonstrated material.

The goal of the *guided practice* stage is to organize and assess the students' learning of terminology and corresponding skills. At this stage, an educator “facilitates” the interaction of students (with the educator or with each other) (Kubrushko, Kozlenkova, Mikhailenko & Nazarova, 2018). Simultaneously, students learn new terminological material and develop the skills of using it in communicative professional – like situations.

At the *independent practice stage*, a student learns alone or in a group, applying the acquired knowledge in skills. Independent studies result in students' understanding of their own needs and struggles. At this point, an educator mainly identifies the educational problems of students and provides consultations, if needed.

In this study, we define the term “instructional *scaffolding* in *terminological training*” as a gradual subject-to-subject interaction of educators and students, aimed at forming *informational*, *practical*, and *reflective constituents* of terminological training, resulting in step-by-step mastering of *terminological literacy*, *terminological competence*, and *terminological culture*.

We believe that the *constituents* of the result component correlate with the three stages of *scaffolding*. Formation of *informational constituent* occurs at the *demonstration stage* – a student develops the skills of identifying and understanding terms, gains knowledge of term formation, and learns to systematize terms. *Practical constituent* correlates with *the guided practice* stage. Consequently, *the reflective constituent* corresponds to *independent practice*. At this stage, a student learns to judge the correctness of term usage and identify mistakes, while understanding the need for constant development of their own terminological knowledge.

CONCLUSION

This paper presents the technological aspect of terminological training of professional workers. We defined the term “terminological training of professional workers” as the process of gradual formation of result components: terminological literacy, terminological competence, and terminological culture.

The study highlighted three directions terminological training: (1) *informative* (learning the terminology of the field of studies), (2) *practical* (learning to apply terminology in solving educational, professional, and scientific tasks), (3) *reflective* (developing the motivation for continuous self – learning of new terminology and skills). The content of terminological training is determined by the constituents of the result component (*informational*, *practical*, and *reflective*).

We applied *instructional scaffolding* to develop the process aspect of *terminological training*. Consequently, we developed a technology of terminological training of professional workers – purposeful

gradual subject-to-subject interaction of educators and students, aimed at forming *informational, practical, and reflective constituents of terminological training*. As a result, students master *terminological literacy and terminological competence*, and achieve *terminological culture*. In the future, this study could be applied in practice. Further studies on the topic would contain the experience of using it in post-secondary and postgraduate education, and the recommendations, courses, and study books on terminological training.

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