Interdisciplinary Bonds in the Process of Learning Ukrainian and English Languages for Specific Purposes

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Abstract: The study substantiates the importance of interdisciplinary bonds in the process of language training of students of forestry higher education institution. The paper aims at revealing the necessity of applying interdisciplinary bonds in the mastering both Ukrainian and English languages for specific purposes (USP and ESP) and development of professional communication skills of the future foresters. In course of the research the essence and distinguishing features of interdisciplinarity are defined. Interdisciplinary bonds are described as the main problem of the study. Theoretical background of this issue is revealed. In the course of our research the possibilities of application of interdisciplinary bonds are demonstrated. Dividing of interdisciplinary bonds into content-informative, operational-active and organizational-methodological ones is revealed to be useful in order to form a systematic approach to their use when learning USP and ESP. Each type of interdisciplinary bonds is illustrated with the lexical tasks and exercises. Application of interdisciplinary bonds to form students' linguistic and communicative competence under the conditions of consistent study of USP and ESP and with the emphasis on professional subjects is considered to ensure a synergetic effect. The research findings prompt the conclusion that close cooperation of language teachers and subject specialists for further mutual enrichment at methodological level, formation of holistic systematic vision of training future foresters, and also continuity in mastering professional terms in Ukrainian and English will provide the level necessary to develop students' professional language.

Keywords: *interdisciplinary bonds; linguistic and communicative competence; professionally-oriented language; professional terminology; the Ukrainian Language for Specific Purposes; the English Language for Specific Purposes.*

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1. Introduction

The development of the global economy of innovative type creates increasing demands on the quality of education and training of future professionals in various professional fields. Due to current transformations towards fully fledged market relations, Ukraine needs highly qualified specialists capable of working in both the domestic and international economies. The processes of integration of the world community, in the field of forestry in particular, lead to changes in the key requirements that are imposed on the qualification of a modern forester. These fundamental changes require an intellectually developed personality, capable of self-education and self-improvement that should be based on new theoretical and methodological principles and also fundamental knowledge. Students' readiness for future professional activity 'includes the following: professional and motivational, interdisciplinary and integrative (integrative and content-based), professional and adaptation components' (Maksymchuk et al., 2019, p. 150). A modern forestry student should formulate the competencies based on which the ability to competitiveness, independent decision making, forecasting and comprehensive analysis of problem situations are developed. Moreover, it is essential that 'the development and transfer of knowledge be carried out continuously and mainly through professional competences with which the graduates will integrate in the economic environment' (Budevici – Puiu, 2020, p. 356). At the same time, a modern highly qualified and educated specialist in the field of forestry should have a perfect competence in both mother tongue and a foreign language, which will define a good command of professionally-oriented terminological competence. Using professionally-oriented terminology, future forester should be able to form and present information correctly in oral and written forms while interacting with colleagues that leads to mutual understanding and adequate treatment. The terminological competence also helps improve the ability to perceive profoundly the necessary information presented in foreign languages and develop professional omnifarious erudition. The above stipulates the need to define the necessity of interdisciplinary bonds when learning a professionally-oriented native and foreign languages.

A high level of development of the student's linguistic and communicative competence as a complete integral quality of personality, 'in which the components are dynamically interconnected, thus enabling competent performance of a specific task or professional duties' (Hrydzhuk, 2017, p. 46). It is extremely difficult to solve this task in the modern higher

education institution without involving teachers of related disciplines. Students simultaneously study both the Ukrainian Language for Specific Purposes (USP) and the English Language for Specific Purposes (ESP), and also a complex of special academic disciplines. The combination of information from various fields of scientific knowledge (theoretical basics of term practicing, professional terms in English, terminology while studying professional disciplines) creates opportunities for interdisciplinary scientific synthesis, as a result of which the student will be able to use the acquired knowledge in the future in a comprehensive way. Interaction between teachers, mutual organization of the educational process, and systematic implementation of interdisciplinary bonds will allow forming a coherent system of professionally-oriented knowledge and skills, that will help teach students to integrate the acquired knowledge, i.e. will become the basis for the formation of a set of competences of future specialists, among which the linguistic and communicative competences provide the students with the ability to 'carry on a conversation competently and reasonably when speaking on scientific, production and business topics' (Hrydzhuk, 2017, p. 46), and thus becomes the basis for their professional development.

Our study is mainly focused on the development of the professionally-oriented language of future specialists. Developing the linguistic and communicative components of the student's future professionally-oriented language is a goal that unites the efforts of both language teachers and subject specialists.

Interdisciplinary bonds that are organized methodically properly in the study of both USP and ESP with the involvement of theoretical material of specialized disciplines, consultations, co-operation with teachers of professional subjects is supposed to promote a deeper, and, therefore better mastering both Ukrainian and English professionally-oriented vocabulary.

2. Research Methods / The main objective of the research

In the research we used the methods of theoretical analysis, generalization, comparison, substantiation, systematization of theoretical and practical materials and descriptive method as well.

Therefore, there appears to be the need to deepen the study of the role of interdisciplinary bonds in the process of learning a native and foreign language for specific purposes in order to fully meet the needs and expectations of the individual to gain new professionally-oriented knowledge, skills and abilities. Consequently, the purpose of this paper is to substantiate the necessity of applying of interdisciplinary bonds in the

mastering of professionally-oriented language both Ukrainian and English and development of professional communication skills of the future specialist in the field of forestry.

3. Literature review

The analysis of recent research of the role of interdisciplinary paradigm suggests that it is getting more important as it facilitates the implementation of new educational ideals of the formation of a holistic system of knowledge and skills of the individual, the development of creative abilities and potential opportunities. Many recent studies have focused on the issues of interdisciplinarity (Baranovska, 2015; Campbell, 1986; Davis, 2007; Frodeman, 2014; Klein, 1990, 2007; Klepko, 2006; Kremen, 2011; Kozlov, Tomashevskaya, & Kuznetsov, 2018; Lawrence & Despres, 2004; Newell, 2001; Sydorko & Tverezovska, 2014). The study of professional training of future specialists in the context of formation of linguistic, communicative and terminological competence has been conducted by Viktorova (2009), Vlasyuk (2013), Klymova (2012), Kochan (2009), Kostikova et al. (2019). Leading theorist of interdisciplinarity Newell (2001) states, 'interdisciplinary study draws insights from relevant disciplines and integrates those insights into a more comprehensive understanding' (p. 2). According to Kozlov, Tomashevskaya & Kuznetsov (2018), interdisciplinary integration is 'the interpenetration of the content of different disciplines as a unification of knowledge, beliefs and practical actions at all stages of training specialists and creation of a unified educational space through the use of innovative pedagogical methods, tools and organizational forms of teaching' (p. 53). Baranovska (2015) argues that 'the idea of synthesis of psychological and pedagogical knowledge becomes the core of the formation of a holistic theory of learning when the system-forming basis is found, which must be substantiated in didactics at three following levels: methodological (integration of laws, regularities, and principles of personality' development; didactic (integration of ideas and didactic theories); applied (integration of the content of educational subjects, methods and ways of teaching). Interdisciplinary integration establishes relationships between the two components of a common human culture – the natural sciences and the humanities, by incorporating the humanities subjects into the content of the natural sciences; the use of natural-scientific methods of cognition, scientific data of natural sciences in the study of subjects of the humanitarian cycle' (p. 35). Vaskivska et al. in their collective monograph (2018) state that 'the principle of interdisciplinarity, constituted

on the integration of knowledge, is considered in correlation with the established principle in the specialized training of students and involves the construction of content of education based on interdisciplinary knowledge grouped according to current socio-cultural and economic problems of the society, and also practical tasks and scientific problems stipulated by them. Consequently, the role of interdisciplinary synthesis of individual educational subjects is highlighted' (p. 43). In this context, interdisciplinary bonds become a factor in optimizing the learning process and the means of synthesizing knowledge, transforming it into a coherent, professionally oriented system. 'Interdisciplinary bonds in education reflect a comprehensive approach to education and training, allowing us to distinguish both the main elements of the content of education and the relationship between the subjects' (Slesyk, 2012, p. 53).

According to Marynovska (2014) integration as a tool of learning is the search for a common platform for convergence of subject knowledge, a means of gaining new knowledge at the intersection of subject one. It fills in the gaps in the student's knowledge gained through differentiated learning, aimed at developing systems thinking. Integration as the purpose of learning involves the formation of holistic knowledge, the creation of his own 'image of the world' in the student's mind. The formation of integrity is considered as a mechanism of self-organization of knowledge, mosaic, encyclopedic, detached from the person's value-sense sphere (p. 34).

The forms, types, and kinds of interdisciplinary bonds described by Sydorko & Tverezovska (2014) reflect the multidimensionality, functional potential of their application in the educational process. In particular, scientists see the potential in the classification of interdisciplinary bonds into content-informative, operational-active and organizational-methodological proposed by Zverev & Maximova (1981), based on the common features of the structure of educational subjects and the structure of the learning process (p. 160). This classification provides the whole range of work with the student, allows forming a systematic approach to their use during students' learning, and, therefore, is supposed to be logically and methodologically justified concerning both educational subjects, USP and ESP.

However, in spite of the considerable theoretical study of the analyzed problem in the scientific literature, there is still not enough practical research demonstrating the possibilities of interdisciplinary bonds in teaching students of Ukrainian and foreign languages. Therefore, it is important to show how interdisciplinary bonds can be used in this process. We consider that the following methods and ways of organizing the learning

process of USP and ESP intensify the educational process, improve the level of language acquisition by students, and can be used in the educational process in other educational institutions both in Ukraine and abroad.

4. Results and discussions

The basis for the formation of professionally-oriented speech competence of the specialist of any field is mastering specialized terminology, both at the level of term semantics (learning their meanings), and their use grammatically and stylistically justified (Hrydzhuk, 2017, p. 47).

The system of specialized knowledge includes knowledge in the subject area such as professional, technical and environmental, and linguistic knowledge in particular, as follows:

- patterns and specificity of the development of forestry terminology;
- analysis of composition and systematic organization of forestry terminology;
- features and requirements to terms, peculiarities of the use of terms in professional speech;
- lexical and genetic features of forestry terminology;
- ways of formation of forestry terminology;
- genres of scientific texts, the features of their formation, etc. (Hrydzhuk, 2017, p. 51-52).

The development of a student's vocabulary is primarily due to the learning of terms, and the formation of skills to use them properly. When the student's terminological vocabulary is rich, the level of his professional language will be higher. Only a methodically properly organized educational process of learning both USP and ESP, efficient system of interdisciplinary bonds can help improve the quality of professionally-oriented language of forestry students.

Synergetic approach

Nowadays, every new progress in the field of education is being carried out due to increasing of the integration of scientific disciplines to solve complex problems that reflect the objective reality – complex, dynamic, uncertain. So, the interaction of various branches of scientific knowledge in solving problems of development of modern education becomes very important. 'Education as a whole is a field of complex research, interdisciplinary approach and system analysis, since it is a 'system' object, as well as its main problem situations are system ones' (Kremen, 2011). As the phenomena and processes contained in interdisciplinarity are

sufficiently complex, multidimensional and multivectoral, we can consider it to be 'a means of solving problems and answering questions that cannot be satisfactorily addressed using single methods or approaches' (Klein, 1990, p. 196). The phenomenon of interdisciplinarity is especially relevant for education as it applies to all branches of knowledge. At present, we are dealing with substantially different types of pedagogical practices (traditional education, religious, esoteric, new humanitarian education, etc.), which are formed in response to a poly-cultural and multicultural civilization situation as well as freedom of educational choice. In modern pedagogical research, the viewpoint is spread, according to which scientific research in the field of education should obey the general structural constant that provides the fundamental order in all systems. Therefore, nonlinear systems function in many situations much more flexibly, increase the ability to adapt and respond to unpredictable, changing conditions and influence them. Nowadays, society, culture and education undergo similar changes at the stage of system formation, rules of connection between invariants. This leads to the fact that main categories that are already formed differ significantly. Therefore, the teacher-scientist is forced to conduct research on the formulation of the basic concepts in a synergistic atmosphere. It means that neither the deductive stage of the study nor the system approach, which is extremely productive, can solve the difficult problems that arise nowadays. Moreover, the education system is a dynamic one, and therefore the method of combining nonlinear relationships between their parts is compatible with all real relations as a medium of their existence, which is achievable through the interdisciplinary approach that can open the essence of the present (Dyak, 2019).

In this paper an attempt is made to study languages as complex dynamic linguistic systems constantly changing since 'complex systems and phenomena are a necessary condition for interdisciplinary studies' (Newell, 2001, p.1). So, if behaviour is not produced by a system or the system is not complex, interdisciplinary study is not required. All systems are made up of components that interact, either directly through mutual causation or indirectly through feedback. Different components of the system interact with each other in order to both enrich its own potential and to enhance the potential of the whole, whose constituent part they are. In our case, the synergetic effect of that kind of organization of work can be expressed with the next formula: $2 + 2 = 5$, which means that 'within the system 'the surplus' emerges, which does not present mere sum of effects of constituent parts, but is the result of interaction of constituents which raise the processes in the system on a higher quality level where the system itself in

feedback enriches and improves each of its constituents' (Grabar & Engler, 2011, p. 6).

Such language components or units as words have a lot of flexibility (new words are added or their meaning is changed), but grammar and syntax remain almost the same. At various levels attention is paid to different aspects. The acquisition of grammar and lexical competences is primarily practiced at the level of primary education, and then these competences are intensified on a secondary education level, while a higher education level mostly involves firstly the Ukrainian language of future profession, and later on the English language for specific purposes. Moreover, real evaluation of acquired language and communication skills is reached in practice in immediate communication with native speakers. Consequently, acquiring and developing both native and foreign language linguistic and communicative competences are necessary for a person to be able to present his professional capabilities when communicating in Ukrainian and English professional environment. In the process of learning a foreign language 'the students should not only be introduced to general patterns of foreign language system or general foreign language idioms, but in cooperation with the foreign language teacher and teachers of professional subjects they should identify those lexical units or topics which are interwoven into their professional studies in an interdisciplinary way in order to acquire lexis which would later serve them as the foundation for further lifelong reorganizing of the specifics of the professional foreign language utterance. Thus, this calls for interdisciplinary approach to teaching foreign languages' (Grabar & Engler, 2011, p. 6). Similar processes occur in the study of USP, where interdisciplinary bonds are also a mandatory component, and learning professional terminology is a common essential element. Figure 1 illustrates the process of forming student's linguistic and communicative competence under the conditions of consistent study of USP and ESP and the use of interdisciplinary bonds with the emphasis on professional subjects.

Figure. 1. The overview of synergetic effect of the development of linguistic and communicative competence resulting from interdisciplinary bonds when learning USP and ESP

To summarize, we can estimate that the basis of effective training is the appropriate methodology of learning process involving interdisciplinary bonds and cooperation of language teachers and subject specialists as well.

Classification analysis of interdisciplinary bonds

According to the classification of interdisciplinary bonds mentioned above, the first type is content-informative. These bonds are ‘established during the formation of the content of knowledge elements such as facts, ideas, concepts, and theories in the process of understanding their features and properties’ (Sydorko & Tverezovska, 2014, p. 160). At this level, USP and ESP work within a common conceptual framework – forestry

terminology – and facilitate the formation of the comprehensive system of students' knowledge of professional terms.

In particular, the curriculum issues of the USP are as follows:

1. Theoretical principles of terminology. Terminology and terminological system.
2. General scientific, interdisciplinary and highly specialized terminology. Terminology as a system. The terminology of the chosen specialty.
3. The term and its features. Requirements for terms.
4. Terms structure and ways of formation.
5. The origin of scientific terminology (concerning the student's speciality).
6. Dictionaries of professional terminology, etc.

The course of the educational subject of ESP is based on the activation, systematization and generalization of vocabulary acquired by participants of the educational process during the previous years of study. The Curriculum also focuses on a considerable amount of educational material, including the following issues:

- professional terms in the field of future vocational training;
- the features of a professionally-oriented dialogue;
- terminological speech clichés;
- the features of translation into the native language of professionally-oriented texts;
- lexical-grammatical and syntactic-stylistic features of the language of the future profession;
- writing summaries and abstracts of professional scientific information;
- work with original professional foreign literature, etc.

The integrated result of studying USP and ESP should be the formation of students' ability to use theoretical and practical knowledge, skills and abilities for effective professional communication with both Ukrainian and foreign business partners and the fulfillment of professional tasks and responsibilities.

Among the forestry terms 'by the degree of specialization of their meaning we distinguish general scientific terms, interbranch terms and specialized terms' (Hrydzhuk, 2017, p. 129). In particular, forestry terminology contains the following general scientific terms: system, structure, optimization, adaptation, potential, method, type, plan, productivity, object, resources, genus, type, etc. It is important to emphasize

to students that these terms are essentially international, i.e., have the same meaning in both Ukrainian and English languages.

Interbranch terms are also inherent of the forestry terminology, namely: biological (клімат [klimat] – *climate*, макроклімат [makroklimat] – *macroclimate*, мікроелементи [mikroelementy] – *microelements*, мікози [mikozy] – *mycoses*, формація [formatsiia] – *formation*, флора [flora] – *flora*, фауна [fauna] – *fauna*), botanical (дендрологія [dendrologiia] – *dendrology*, симбіоз [symbioz] – *symbiosis*, хромосома [kbromosoma] – *chromosome*, фітотклімат [fitoklimat] – *phytoclimate*, фотосинтез [fotosyntez] – *photosynthesis*), ecological (абіотичні фактори [abiotychni faktory] – *abiotic factors*, екосистема [ekosystema] – *ecosystem*, фільтрування води [filtruvannia vody] – *water filtration*, ресурси [resury] – *resources*), chemical (піретрин [piretryn] – *pyrethrin*, нікотин [nikotyn] – *nicotine*, зооциди [zootsydy] – *zoocides*, фосфор [fosfor] – *phosphorus*, кальцій [kaltsii] – *calcium*), physical (радіоактивність [radioaktyvnist] – *radioactivity*, шкала [shkala] – *scale*), geographical (буферна зона [buferna zona] – *buffer zone*, ландшафт [landschaft] – *landscape*, агроландшафт [ahrolandschaft] – *agro-landscape*, рельєф [relief] – *relief*), economic (аудит [audyt] – *audit*, продукція [produksiia] – *products*, обігом [oborot] – *turnover*), technical (механізація [mekhanizatsiia] – *mechanization*, машини [mashyny] – *machines*, технологія [tekhnohiiia] – *technology*, трактор [traktor] – *tractor*), architectural (мозаїка [mozaiika] – *mosaic*), geodetic (пункт геодезичний [punkt beodezychnyi] – *geodetic point*), etc. (Hrydzhuk, 2017, p. 129-130).

Forestry terms form the core of the terminological system. At USP classes, students track thematic groups of forestry terms and proceed to work at ESP classes when they are required to classify the English terms that is shown in Table 1.

Table 1. Thematic groups of forestry terms

Ukrainian terms	English terms
лісівничі науки [lisivnychi nauky]	<i>forest science</i>
ознаки лісу [oznaky lisu]	<i>forest land signs</i>
види лісів [vydy lisiv]	<i>types of forests</i>
тип лісу за віком насаджень [typ lisu za vikom nasadzhen]	<i>forest type by treestand age</i>
назви природоохоронних територій [nazvy pryrodookhoronnykh terytorii]	<i>names of protected areas</i>
типи лісової підстилки [typy lisovoi pidstylky]	<i>forest litter types</i>
способи вегетативного розмноження рослин	<i>methods of plant vegetative propagation</i>

<i>[sposoby vechetatynnoho rozmnozhenia roslin]</i>	
<i>флора України [flora Ukrainy]</i>	<i>flora of Ukraine</i>
<i>фауна України [fauna Ukrainy]</i>	<i>fauna of Ukraine</i>
<i>групи деревних порід [hropy derevnykh porid]</i>	<i>groups of tree species</i>
<i>специфіка будови деревини</i>	<i>properties of wood structure</i>
<i>[spetsyfyka budovy derevyny]</i>	
<i>вади деревини [vady derevyny]</i>	<i>wood defects</i>
<i>спеціальні процеси [spetsialni protsesy]</i>	
<i>special processes</i>	
<i>машини, обладнання [mashyny, obladnannia]</i>	<i>machinery, equipment</i>
<i>найменування фахівців галузі</i>	
<i>names of the industry specialists</i>	
<i>[naimenyuvannia fakhivtsiv haluzi]</i>	

Such training both enhances students' theoretical knowledge of the profession, and also enables students to understand forestry terminology as a coherent, hierarchically organized system in which each term denotes a special concept and takes its own place.

We can suggest the second type of practicing forestry terminology according to interdisciplinary bonds classification to be 'operational-active interdisciplinary bonds'. They are related to cognitive activities (application of such skills as general educational skills, thinking, creative, linguistic, and evaluative) (Sydorko & Tverezovska, 2014, p. 160).

When analyzing with students forestry terms according to formal and structural features, we distinguish the following types:

terms that are simple words (*лісівництво [lisivnytstvo]* (forestry), *мисливство [myshyvstvo]* (hunting), *рясність [riasnist]* (abundance), *жолоблення [zholoblennia]* (warpage / warping), *заліснення [zalisnennia]* (afforestation));

- terms that are compound words (*лісосіка [lisosika]* (cutting area), *лісосплав [lisosplav]* (timber floating), *лісовостан [derevostan]* (forest stand), *криволісся [kryvolissia]* (krummbolz), *лісоматеріали [lisomaterialy]* (wood products));

- terms that are terminological phrases (*лісове господарство [lisove hospodarstvo]* (forest district), *текстура деревини [tekstura derevyny]* (wood texture), *ядро деревини [yadro derevyny]* (wood core), *смоляний канал [smoliany kanal]* (resin duct / gum duct), *стиглий лісовостан [styblyi derevostan]* (mature stand));

- terms that are acronyms (*га [ha]* (гектар [hektar]) – *га* (Hectare), ГІС [GIS] (Географічна інформаційна система [Heografichna informatsiina systema]) – GIS (Geographic Information System), ФАО [FAO] (Продовольча та сільськогосподарська організація [Prodovolcha ta silskohospodarska orhanizatsiia]) – FAO (Food and Agriculture Organization), ЛП [LP] (лісовий покрив [lisovi pokryv]) – FC (Forest Cover), МСОП [MSOP] (Міжнародний Союз Охорони

Пруподу [Міжнародний Союз Окбороні Пруроду]) – WCPA (World Commission on Protected Areas));

Projection of Ukrainian forestry terms into the English language helps students understand that terms have similar formal and structural features in English forestry terminological system.

The core components in terminological phrases have the same word-formation capacity for naming specialized concepts in both Ukrainian and English languages. We will illustrate this thesis with the example of the term *лісоматеріали* [*lisomaterialy*] (*wood product*) that is shown in Table 2:

Table 2. Word formation of the term *лісоматеріали* [*lisomaterialy*] (*wood product*) in Ukrainian and English languages

	Ukrainian terms	English terms
	<i>лісоматеріали колоті</i> [<i>lisomaterialy koloti</i>]	<i>split timber</i>
<i>лісоматеріали</i> [<i>lisomaterialy</i>] (<i>timber / wood products</i>)	<i>лісоматеріали круглі</i> [<i>lisomaterialy krubli</i>]	<i>roundwood</i>
	<i>лісоматеріали тонкомірні</i> [<i>lisomaterialy tonkomirni</i>]	<i>small-sized timber</i>

A lexeme *ліс* [*lis*] (*forest*) shows high word-formation capacity of forestry terms both in Ukrainian and English languages. Ukrainian terms that are complex words containing the first morpheme *лісо-* [*liso-*] are transformed into terminological phrases with an attributive component *forest* in the English language (*лісозахист* [*lisozakhyt*] – *forest protection*, *лісознавство* [*lisoznavstvo*] – *forest science*, *лісокористування* [*lisokorystuvannia*] – *forest exploitation*, *лісокористувачі* [*lisokorystuvachi*] – *forest users*, *лісомеліорація* [*lisomelioratsiia*] – *forest amelioration*). In terminological phrases, a lexeme *ліс* [*lis*] (*forest*) performs both predicative and attributive functions, that is shown in Table 3.

Table 3. Variants of terminological phrases with a lexeme *ліс* [*lis*] (*forest*)

<i>ліс</i> [<i>lis</i>] (<i>forest</i>) as a predicative component		<i>ліс</i> [<i>lis</i>] (<i>forest</i>) as an attributive component	
ліси аридні [<i>lisy arydni</i>]	arid forests	лісова сертифікація [lisova	forest certification

<i>sertyfikatsiia]</i>			
ЛІСИ високопродуктивні [lisy vysokoproduktyvni]	highly productive forests	ЛІСОВА асоціація [lisova asotsiatsiia]	forest association
ЛІСИ водорегулюючі [lisy vodorehuliuuchi]	water-regulating forests	ЛІСОВА ділянка [lisova dilianka]	forest plot
ЛІСИ експлуатаційні [lisy ekspluatatsiini]	industrial forests / exploited forests	ЛІСОВІ смуги [lisovi smuhy]	forest belts
ЛІСИ листопадні [lisy lystopadni]	deciduous forests	ЛІСОВА дорога [lisova doroha]	forest road
ЛІСИ островні [lisy ostrivni]	forest outliers	ЛІСОВЕ господарство [lisove hospodarstvo]	forest management
ЛІСИ особливого призначення osoblyvoho pryznachennia]	special purpose [lisy forests	ЛІСОВЕ урешування [lisove ubrupovannia]	forest plant community
ЛІСИ перестійні [lisy perestiini]	overmature forests	ЛІСОВИЙ масив [lisovyi masyv]	forest tract
ЛІСИ захисні [lisy zakhyzni]	protective forests	ЛІСОВЕ середовище [lisove seredovyshe]	forest environment
ЛІСИ мішані [lisy mishani]	mixed forests	ЛІСОВИЙ сектор [lisovyi sektor]	forest sector
ЛІСИ природні [lisy pryrodni]	natural forests	ЛІСОВІ меліорації [lisovi melioratsii]	forest reclamation
ЛІСИ рекреаційні [lisy rekreatsiini]	recreational forests	ЛІСОВИЙ фонд [lisovyi fond]	forest fund

The analysis of such phrases indicates that they are often formed by the literal translation of their components, e. g., *лісова політика* [lisova polityka] – forest policy, *лісова стратегія* [lisova stratehiia] – forest strategy, *лісове право* [lisove pravo] – forest law, *лісова рента* [lisova renta] – forest rent, *лісовий кадастр* [lisovyi kadastr] – forest cadaster, *лісові ресурси* [lisovi resursy] – forest resources.

Finally, the third type of interdisciplinary bonds is distinguished as organizational and methodological interdisciplinary bonds, which ‘summarize the methods, techniques and forms of the organization of

training, providing students with effective ways to acquire general subject knowledge and skills' (Sydorko & Tverezovska, 2014, p. 160).

We consider vocabulary exercises, training, creative and communicative tasks, and also exercises for observing the terms in a professionally-oriented scientific text to be perspective.

The expediency of using English professional terms when learning USP and Ukrainian professional terms in the course of ESP is obvious. The suggested below exercises, which have appeared to be efficient in mastering lexical material, are to confirm this thesis.

Task 1. Look up in Explanatory Forestry Dictionary (Tunytsia & Bobuslaiev, 2014) and choose 10- 15 Ukrainian terms that are simple words formed by the method of tracing and have the same meaning in both Ukrainian and English, like in the example: флора [flora] – flora. Put them down and memorise.

Task 2. Look up in Explanatory Forestry Dictionary (Tunytsia & Bobuslaiev, 2014) and choose 10 - 15 Ukrainian simple word terms that are English terminological phrases, like in the example: лісцвмість [lisyist] – forest cover percent. Put them down and memorise.

Task 3. Match English words and word-combinations with their equivalents in Ukrainian.

1) timber	a) лісівник [lisivnyk]
2) landscape	b) захист [zakhyst]
3) forestry	c) повноваження, відповідальність [povnovazhennia, vidpovidalnist]
4) protection	d) відновлення [vidnovlennia]
5) responsibility	e) саджанець [sadzhanets]
6) conservation	f) лісоматеріал(и) [lisomaterialy]
7) regeneration	g) ґрунт [grunt]
8) seedling	h) лісозаготівля [lisozahotivlia]
9) species	i) різновид; порода [riznovyd; poroda]

Task 4. Find English equivalents to the following words and word-combinations in the text provided below, put them down and memorise.

Лісівництво [lisivnytstvo], лісівник [lisivnyk], дерево [derevo], ліс [lis], лісоматеріал [lisomaterial], вирощувати [vyroshchuvaty], доглядати [dobliadaty], сировина [syrovyna], жива природа [zhiva pryroda], природне середовище [pryroodne seredovyshche], відпочинок [vidpochynok], ландшафт [landschaft], руйнування [ruinuuvannia], захист [zakhyst], біорізноманіття [bioriznomanittia], вододіл [vododil], вуглекислий газ [vuhlekyslyi haz].

Silviculture, a related science, involves the growing and tending of trees and forests. Modern forestry generally concerns itself with: assisting forests to provide timber as raw material for wood products; wildlife habitat; natural water quality management; recreation; landscape and community protection; employment; aesthetically appealing landscapes; biodiversity management; watershed management; erosion control; and a 'sink' for atmospheric carbon dioxide. A practitioner of forestry is known as a forester. Note that the word 'forestry' can also refer to a forest itself.

Task 5. Match up English words and word-combinations on the left with their Ukrainian equivalents on the right. Use these words and word-combinations in the sentences of your own.

1) raw material	a) вироби з деревини
[vyroby z derevyny]	
2) grow the tree	b) відновлювальний процес
[vidnovliuvalnyy protses]	
3) wood products	c) інвентаризаційний опис
дерев
[inventoryzatsiyniy opys derev]	
4) urban park	d) людські поселення
[liudski poselennia]	
5) regeneration process	e) ретельна заготівля
[retelna zahotivlia]	
6) implement a plan	f) гідрологічні умови
[hidrolohichni umovy]	
7) tree inventory	g) виконувати план	план
8) human habitation	h) вирощувати дерево
[vyroshchuvaty derevo]	
9) careful harvesting	i) сировина [syrovyna]	
10) hydrological conditions	j) міський парк [miskyi park]	

The sequence of performing the exercises reflects the stage of students' mastering the material, and the sequence of the development of their professionally-oriented skills and abilities. The range of exercises and tasks developed is much wider, but the volume of the article does not allow illustrating them fully.

We believe that this way of organizing the educational process will ensure the formation of sustainable skills in professional terminology both in Ukrainian and English.

5. Conclusions

In the conditions of the formation of a new education paradigm, narrowly detailed, narrowly disciplinary delineation of educational issues are becoming counterproductive. Interdisciplinarity in its broadest sense is a trend, a problem and a global issue. A variety of circumstances and causes that are multi-layered, multi-vector and contradictory actualizes this issue. Therefore, interdisciplinarity should be analyzed in detail in order to be implemented into the educational process of higher education institutions. Mutual interaction of various fields of scientific knowledge towards the professional formation of highly-qualified specialists is getting more acute as applying interdisciplinary bonds of various educational subjects in training enables educational process to be holistic and systems one. One of the factors defining the efficiency of person's professional activity is his formed linguistic and communicative competence, i.e., professionally-oriented language. Its level directly depends on acquiring professionally-oriented terminology and also skills in professional communication both in native and foreign languages.

Moreover, the use of interdisciplinary bonds in the educational process will ensure the formation of sustainable skills in using professional forestry vocabulary in both Ukrainian and English languages. Such skills provide a high level of excellence and also enable scientific and industrial communication, i.e., regulatory use of specialized names; proper level of oral scientific communication; comprehension and analysis of your own and other people's statements; creation, editing and translation of scientific texts in the field of forestry, etc. The described experience of applying interdisciplinary bonds in the process of learning USP and ESP at Ukrainian National Forestry University can be used for studying both languages and humanities in general in higher education institutions.

Thus, interdisciplinarity is one of the brightest examples of the present, which is the integral element of the future of scientific research and the development of higher education.

Prospects for further research include the development and holding of series of interdisciplinary workshops and seminars to improve the language training of future forestry professionals.

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