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Parallel Support of Specialized and Foreign Language Competences as a Tool to Improve the Quality of Contemporary University Education

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Abstract

The aim of the article is to explain the relevance of parallel support of both specialized and foreign language competences in the process of university education. This ambition results from the output of the *KEGA 018TU Z-4/2014 Implementation of educational methods for enhancement of the education in field of Technical mechanics* research project that focused on the modernization of educational methods in order to improve the educational process in the area of selected specializations. Beside other tools, educational materials have been developed based on didactic principles supporting the acquisition of both specialized and foreign language competences. The first part of the article deals with the theoretical background applied in the process of developing the educational materials; the second part presents specific educational material developed as one of the project outcomes.

Keywords: specialized language, German as a foreign language, support of specialized and foreign language competences, contemporary university education

1. The text as an information providing tool

In the educational process, mediating knowledge is one of the core aims. The rate of achievement of this goal determines the success of the educational efforts of every teacher. Texts represent one of the most important parts of the information transfer process. Therefore, it is understandable that the text with all its specific characteristics determined by the didactic context is at the centre of interest when discussing mediating knowledge. Educational texts are characterized by a certain level of specialization, since mediated knowledge usually relates to a field of specialization, or at least shows some affinity with it. However, it is important to emphasize that the language used in actual scholarly texts and the (specialized) language of didactic texts cannot be put at the same level. The next part of the article therefore deals with the term *specialized language* from two viewpoints: a) overall view; b) didactic aspects.

Specialized language as a term is not clearly defined in linguistics. There are deviations between individual definitions despite similarities. One of the, so to speak, classic definitions reads as follows:

"*Specialized language – set of all language means used in a single field of expertise in order to facilitate communication among experts in the given field*" (Hoffmann 1987, 53) [translation from German].

According to a more recent definition by Schubert, specialized language needs to be distinguished from general language, however, they are mutually related and a clear boundary between them cannot be determined. Specialized language is understood as one of the language varieties. While formulating the definition, the author refers to his colleagues, e. g. Fluck (1996), Hoffmann (1976), Göpferich (1995), Kalverkämper (1996, 1998), Gardt (1998) or Roelcke (1999).

"A language pertaining to a language community is a total language that consists of different varieties. These varieties are not mutually exclusive -- they share the lexical and grammatical core within the total language. The individual varieties are used in certain fields of human communication. Varieties facilitating specialized communication are called specialized language" (Schubert 2007, 147) [translation from German].

Another important aspect of specialized language is its pragmatic aspect. In terms of the pragmatic approach, the language is closely interconnected with the context, specific situation and the response of the text producer on the linguistic level, i. e. the expert. Buhlmann a Fearns define specialized language as follows:

"The actual specialized language is always determined by a field of expertise, because it requires absolute clarity concerning concepts and statements. If it is used by a layman, the specialized language loses its direct relation to specialized thinking; concepts and statements lose a significant portion of their content and precision, especially in terms of their relation to the specialized system with which the layman is not acquainted" (Buhlmann, Fearns 1987, 12) [translated from German].

Based on the definitions cited above, it can be concluded that in defining the term *specialized language*, it is not sufficient to draw merely from the language means (lexical level); the essence of the specialized language can only be captured if elements such as the language user and specific situation are taken into consideration. Therefore, besides questions relating to the language level as such, it is also important to address further questions such as, who are the communicating parties? what is the communication subject? At this point, it is possible to refer to the vertically and horizontally arranged classification of the specialized language as developed by Hoffmann (1987)*.

The vertical arrangement deals with the question of communication participants. Hoffmann distinguished five levels of discourse. The highest level represents a discourse between scientists and it is characterized by the highest level of abstraction. It means that in such discourse, a large number of terms are used; their comprehension depends upon the participants' knowledge of the concepts they represent. This discourse level represents the specialized language in its typical form. It is usually described as exact, clear, logically arranged, highly abstract, neutral (in terms of stylistics), and incorporating use of terminology. The use of terminology is one of the basic characteristics of specialized language. The primary function of terminology is nominal; it is exact, clear, independent from the context, rational, it lacks modality and expressiveness, and the terms are a part of a system (Hoffmann, 1987). These attributes directly reflect in the characteristics of the specialized language. The lowest, 5th, level of Hoffmann's classification represents the communication between the material production representative, sales representative, and the customer. This discourse level is the most distant from the concept of specialized language. It is characterized by a low level of abstraction, use of natural language, and low usage of terminology.

The horizontal arrangement relates to the communication subject. Different scientific disciplines exist next to each other, i. e. this arrangement is determined by the relations across different scientific areas.

It is also important to deal with the term *general specialized language*. Hoffmann (1987, 62) defines it as a "*summary of all language means that occur in all specialized texts*." It includes all concepts with which all experts are more or less familiar (regardless of their field of expertise), because their use relates to science in general, therefore they can be used in almost all scientific fields. In terms of their use, the aspect of the vertical arrangement is more important than the aspect of their affiliation with a specialization. Examples include terms such as: *analysis*, *synthesis*, *production*, *elimination*, etc.

2. The position of specialized language in the educational process

The issue addressed in this chapter relates to the question of how the general characteristics of specialized language can be applied to the didactic texts, or the use of specialized language in the educational process. In terms of the vertical arrangement, this situation can be considered specific. It cannot be assigned to any of the levels proposed by Hoffmann. The relation between the *author of the coursebook* and the *student* is characterized by a difference in their knowledge bases; it is probably closest to the 5th discourse level (sales representative -- customer), in which the sales representative is the party possessing the knowledge which they want to mediate to their (uninformed or less informed) customer. However, the situation cannot be considered parallel to

*The five discourse levels according to Hoffmann (1976, 186): 1) scientist – scientist; 2) scientist (technician) – scientist (technician); 3) scientist (technician) – scientific and technical head of material production; 4) scientific and technical head of material production – foreman – skilled worker; 5) material production representative – sales representative – customer.

the educational process. The difference is that the course book author wants to mediate the information not only in a comprehensive, but also in a professional way. Students are supposed to comprehend the relevant connections within a specialized context, i.e. they should acquire knowledge in a complex and systematic way. However, this requirement does not apply to the customer (in terms of Hoffman's vertical arrangement of discourse levels, see Note No. 2). It is sufficient if the customer receives the amount of information relevant for them in their position. As can be seen, there is a clear qualitative difference between these situations. Even more differences result from this, relating for example to the way lexical means are employed. Since the contents of the course need to be explained at a certain level of specialization, the use of terminology is necessary. It draws this kind of discourse closer to the scientific pole. From this point of view, this situation can be assigned to the middle of the 5-level arrangement. Such communication is not entirely abstract as in case of a discourse between two scientists, yet on the other hand, it does not lack abstraction completely as a 5th level discourse. The terminology has a stable position in the educational process, however, it needs to be mediated in an adequate (not necessarily scientific) way so that the student with a limited knowledge base can comprehend it. Only if this step is successfully taken, can the terms be worked with and used in further communication within the educational process.

In terms of the horizontal arrangement, the situation is similar, i.e. didactic texts cannot be considered actual specialized texts. In the process of knowledge mediation, the distinction between specific fields is less important than the way specialized knowledge is mediated. Regardless of certain typical ways of representing information by means of abbreviations of symbols, e. g. in mathematics, chemistry or physics, no large distinctions can be found. It is much more important to emphasize the common basis resulting from the general scientific language.

More distinctions result from the medium used, i.e. whether communication is oral or written. This article focuses on written communication.

From the general point of view, the following can be concluded: Didactic texts cannot be classified as prototypical specialized texts. In comparison to specialized texts, the distinctions do not result merely from the language level, but also from the pragmatic relations (e. g. situation, language user). We believe that the pragmatic factors determine the primary distinction between the types of text and the distinctions on the linguistic level result from these as a secondary phenomenon. Didactic texts are close to prototypical specialized texts, however, they are characterized by certain specifications that should not be overlooked. Due to this fact, in terms of classification of didactic text into the system, the prototypical model seems appropriate; based on it, didactic text could be placed at its periphery. This results from the attributes that distinguish them from the prototypical concept of a specialized text.

3. Texts in the educational process and the processual aspects of knowledge mediation

Based on the above, it is clear that didactic texts hold a specific position within the system. In the educational process, they fulfil a specific function. The usual neutral, descriptive viewpoint is replaced with a perspective in which the educational process focusing on knowledge mediation and teaching is at the centre. The (didactic) specialized text serves as a tool to extend the competences of the learners. The tool is effective only if it is used properly. Therefore, didactics focus on working with text. A written text should serve as a tool to acquire knowledge that the reader processes mentally, therefore it is important to adequately capture the relation between the text structure and the methods for its processing to develop an efficient teaching strategy. We believe that the concepts that address both structure and function of the text are of key importance for mediating these processes. The structure reflects the material level of the text, i. e. how we perceive it (read or hear). The non-material level relates to the functional viewpoint which addresses the way in which the information (material) represented in the text is dealt with. This perspective also implies taking into consideration the cognitive approaches in linguistics. In the context of specialized language, the term **specialized communication** is often referred to. It is related to the development of the issue of specialized language. Specialized communication represents the dynamic, processual aspect of knowledge mediation. In this way, the focus shifts, i.e. system-oriented structuralist approaches are replaced with pragmatic aspects determined by a specific situation.

4. Pragmatic aspects

4.1. Pragmatic concepts

We have already addressed pragmatic concepts as the theoretical starting point for the research of different aspects of mediating information through language elsewhere (compare Tuhárska 2011, 68 ff.), therefore only a brief overview is included in this article. The term *pragmasyntax* incorporates the interconnection of the language with the knowledge structures of the language users. Schulze (2003) defines *pragmasyntax* as follows:

"*In the tradition of the cognitive typology as represented for example by the 'Grammar of Scenes and Scenarios' Model, pragmasyntax is understood as the area of linguistics knowledge which (besides other functions) determines the method of linguistic linearization of the perception of form (German: Gestalterfahrungen)"* [translated from German].

To put it simply, it is the way in which the three-dimensional perception of realities or mental concepts are represented linearly in the form of language. How do 3D realities transform into the linear form of linguistic expression?

The concepts that reflect the basic idea of pragmasyntax include the *Grammar of Scenes and Scenarios* (GSS) and *Attention-Information-Flow* (AIF) concepts. The GSS concept is based on the *Stage Metaphor* according to which real-life situations or mental concepts are perceived as an analogy to the stage; the actors and relations between them constitute a certain microcosmos, i. e. an analogy to the possible real form of the world. The question is how this image (or reflection) can be mediated through the means of language. The AIF concept is based on the idea that subjectively relevant perceptions are transferred into the form of language by the language users.

„The AIF can be defined as the paradigmatic architecture to linguistically construe a stimulus input of Word stimulus (experimental, memory-based or verbal). The Attention Flow represents the process of qualifying and segmenting an input event according to (sensation based and habitualized (or: entrenched)) cognitive patterns ('diairesis' in terms of GSS). … Information Flow is defined as the process of constructing a linguistic 'event-image' in terms of a presentational simulation of the stimulus input in accordance with the linguistic knowledge of a speaker" (Schulze 2004, 549).

4.2. The application of pragmatic concepts

In general, pragmatic concepts can be applied to the selection of content during the creation of educational materials. In the context of linguistics, the term *pragmatic* relates to the use of language in specific situations determined by extralingual factors, therefore it would be desirable to focus on the language as used in practice by incorporating language structures commonly used in the given (specialized) context into the educational process. However, based on the above mentioned specifications of mediating specialized knowledge in a foreign language in the process of university education, it is also important to take into consideration the didactic aspect that emphasizes the adequacy of the way specialized information is mediated. Creating educational materials in the context of specialized education in a foreign language cannot be perceived merely as adapting foreign specialized texts in their original form (despite the fact that it adds authenticity to the process). The creation of educational materials should be an outcome of an elaborate synthesis of multiple sources based on specific principles and goals; these sources should include authentic parallel texts from the relevant field of specialization in the foreign language, explanatory and translation dictionaries and also specialized literature from the given scientific area. Last but not least, the practical experience of experts in the field is also of key importance.

5. Contents of educational materials and relevant sources

In mediation of specialized content in a foreign language, parallel texts play an important role as a source of information. According to multiple sources (compare e. g. Wills (1996, 160), Göpferich (2000, 233), the term parallel text refers to texts in both source and target languages that share the same or similar topic, media and stylistic homogeneity, function, communication framework, rhetoric structure, and conditions of origin. The acquisition of an ideal way of working with foreign specialized texts, either on the level of perception or production, requires not only a good command of the terminology in both source and target languages, but also the way language means are used stylistically. An important source of knowledge facilitating the identification of such analogies are the parallel texts -- they serve as complex sources of information at the

morphological and syntactical, lexical, and stylistic levels. Parallel texts allow examination of the researched phenomenon in a broader context which significantly increases the quality of language skills and prevents certain types of errors (e. g. negative transfer, word-to-word translation) that result from neglecting the contextual relationships.

Lexicographical publications are another important source. They include translation dictionaries that serve mainly for identification or verification of the relevant foreign language equivalent at the lexical level. Monolingual explanatory dictionaries provide characteristics of selected central terms from a given field; by verification of the equivalence of the given term in both the source and target languages and their intentional characteristics, it is possible to specify the level of their semantic equivalence, thus encouraging one's confidence in using the terms.

Pre-existing specialized publications covering the relevant area are also an important source, e. g. university course books, research studies, and monographs summarizing the current state of knowledge in the given field of specialization (compare e.g. Balke 2014, Bodnár – Minárik 2009). In the process of acquisition of specialized knowledge presented in a foreign language, the recipient can get acquainted not only with specialized facts at the contentual level and verify the professional validity of terms found elsewhere, they can also observe the way the specialized knowledge is presented at the language level, i. e. they can observe adequate formulations in the foreign language.

The practical experience of experts in the subject comprises a part of the synthesis of different sources of knowledge that should be reflected in the process of creation of educational materials and their content. These inputs represent the basis for the selection of suitable content which the graduate will more than likely meet with in their professional practice. Ďuricová (2008, 33) also points out the relevance of the interconnection of the educational process and practice in the context of translation studies: "*...it is necessary for the translation process to simulate the actual translation work in the educational process*."

However, in terms of technological progress and related possibilities, it is important to take into consideration that various types of media exist which can serve as valuable information sources useful both in the educational process and also in the context of mediating specialized knowledge in foreign languages. The specificities resulting from the variety of media in the context of the educational process have been addressed by Štefaňáková a Molnárová (2015).

The integration of a variety of different sources into the process of creation of specialized educational materials in a foreign language increases the complexity of the approach, potentially also increasing their quality. Here, the focus is on the **specialization** (its level is determined by the knowledge input regardless of the language of mediation), **specialized language** (i. e. the specificities of mediating specialized knowledge through a language), and last but not least, the **foreign language** (and its specificities).

The content of the educational materials should not only synthesize the above mentioned sources, but also take into consideration the parameters of the **target group**. The following can be concluded: Practically, it is required that during their university studies, students acquire specialized knowledge in a foreign language. Therefore, targeted parallel support of both specialized and foreign language competences seems necessary. In the context of established study fields in the current university environment, this goal is relevant for two target groups: students of other than philological study programmes focusing mainly on achieving specialized qualifications in a field other than linguistics, and students of philology and translation studies. However, this diversification is accompanied by the need to distinguish between the groups and take into consideration their specifications.

6. Didactic principles and methods in the process of creation of educational materials

The process of creation of educational materials focused on the intentional parallel support of specialized and foreign language competences should not be intuitive or random -- it should follow specific principles and take into consideration proper methods based on practical application of theory. Specialized literature provides a selection of multiple principles and methods that have proved suitable for knowledge mediation over time. They have been discussed in detail elsewhere (compare e. g. Tuhárska (2014a, 337ff.), Tuhárska (2014b, 198ff.), Tuhárska 2016a, 100ff.),

therefore they will be only briefly summarized in the following Table 1 and subsequently characterized.

Table 1. Creation of educational materials: principles and methods

Principles	***Methods and factors***
1. Firm knowledge base	Harmony between content of specialized courses and foreign language course
2. Interconnection of specialized and foreign language competences	Emphasizing selected contents and (language) skills
3. Unity and diversity	Homogenous (unified) structure of educational materials as a whole vs. variation in the typology of exercises
4. Adequacy: foreign language competence of students and methodical approach	Motivation factor vs. difficulty level of educational material in a foreign language
5. Reinforcing acquired knowledge through tasks and exercises	Interactiveness of educational materials
6. From simple to complex	Receptive -- reproductive -- productive (creative) tasks and exercises
7. From known to unknown	Identical, similar, known -- different, new
8. The principle of balance	Language difficulty level -- level of specialization

The principle of a **firm knowledge base** draws from the idea that the goal of mediation of (not only) specialized information in any language is for the information to be understood, therefore the specialization forms the base, and the transformation of the information into the foreign language is considered its extension. Because of the primacy of the basic (specialized) competence, the taught specialized content needs to be harmonized with the foreign language courses. The principle implies the importance of the **interconnection between the specialized and foreign language competences** in terms of specific topics that are to be presented and developed in foreign language courses. The specialized knowledge component presented in the foreign language needs to be reduced in comparison to the total amount of specialized knowledge acquired during the studies in one's native language due to the disproportionate number of specialized and language courses in ordinary study programmes. **Unity and diversity** reflect in the unified overall structure of educational materials and the variety of their contents, tasks and exercises aiming to eliminate recurring and thus stereotypical (boring) contents. The **current foreign language skill of the target group** is also very important -- specialized contents must be mediated at an adequate difficulty level; underestimating the language skills of the learners tends to have a demotivating effect. By **incorporating an interactive component** into the educational materials, active acquisition of knowledge and skills is facilitated providing the learners with an opportunity to continuously train and reinforce the competences. The "**from simple to complex**" principle (compare Comenius 2007) is applied in the form of tasks and exercises with gradating difficulty from receptive through reproductive to productive and creative. The "**from unknown to known**" principle (compare Comenius 2007) is also well established; it is based on the transfer of acquired knowledge into new topics, e. g. the transfer of lexemes (their formatives) known from the common language into the area of specialized language -- through metaphorization they gain new meanings. The **principle of balance** is very important. Specialized texts employ rather complex means of expression which can result in decreased comprehension. Through didactization, better comprehensibility of texts can be achieved, but on the other hand, the precision of the mediated information can be decreased (compare Scheme 1). Therefore, well-balanced educational material presenting specialized knowledge in a foreign language is of key importance, i. e. the right correlation between the levels of specialization and comprehensibility that are effective for the given target group.

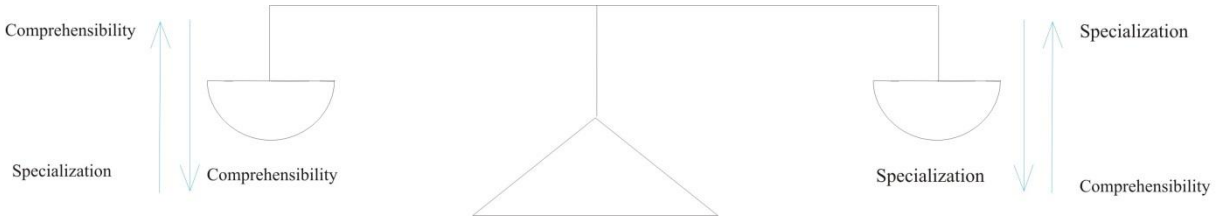

Fig. 1. Scheme 1

7. Publications addressing the above described context

Within the implementation of the *KEGA 018TU Z-4/2014 Implementation of educational methods for enhancement of the education in field of Technical mechanics* project, the aim was to apply the theoretical background presented in the previous part of this article in practice and create educational materials that complied with these principles (project outcome). In the course of the project, two publications were made. In 2015, an university course book named *Pružnosť a pevnosť v slovenčine a nemčine (Firmness and Flexibility in Slovak and German)* by Tuhárska – Minárik and in 2016, *Vybrané termíny z mechaniky telies v slovenčine a nemčine (Selected Terminology from Object Mechanics in Slovak and German)* were published.

The *Pružnosť a pevnosť v slovenčine a nemčine university course book* *is targeted not only at students of technical universities who are learning German, but also at students of translation studies who are studying German.* The goal of the educational materials is the intentional parallel support of both specialized and foreign language competences for the target group. The structure of the university course book closely follows the guidelines set out in theory. The content reflects the diversity of sources explained in this article. The texts were selected with the goal of acquainting the reader with the basic laws of firmness and flexibility as an area of specialization. The publication was created mainly in order to support the specialized competence with the language competence, i. e. to provide specialized texts dealing with the topic in both German and Slovak. This way, the student can acquire specialized knowledge in their mother language and also learn how these specifics are formulated in German at the same time. It is also important to develop the receptive and productive skills needed for communication in the given field of specialization (i. e. close reading, training strategies in written and, to some extent, also oral communication). The course book consists of eleven chapters with a unified structure that allows for quick orientation and easy manipulation with the texts. Each chapter consists of an introduction in both Slovak and German that defines the basic starting points and goals for the topic. Subsequently, the Slovak specialized part follows, i. e. texts mediating specialized knowledge. They are complemented and illustrated by solved examples and exercises that are to be solved. The students can use the summary and questions located at the end of the Slovak part of the chapter in order to check their progress. Thorough acquisition of specialized knowledge in Slovak is a precondition for their reproduction in the other (in this case, German) language. The Slovak part is followed by the German text that presents information on the same topic. The student can therefore compare the way the same specialized information is expressed in German and learn the vocabulary related to the given field of specialization. Language competence is further developed by tasks focusing on terminology and grammar. Through the specialized vocabulary from the individual chapters the students can exercise not only grammatical phenomena typical for specialized German texts (nominal style, attributes, subordinate sentences, etc.) and increase their language competence in terms of text production (e. g. describing charts, emphasizing language means) by using particular phrases offered in the chapters. The German text part ends with specialized vocabulary that summarizes the lexis in the given chapter that helps the reader with orientation in the text even if they use the course book individually. Here they can find a detailed overview of highly specified terminology that often cannot be found in specialized dictionaries. The final part of the university course book contains a key to the tasks in the text part thus providing feedback.

The **publication** *Vybrané termíny z mechaniky telies v slovenčine a nemčine* (*Selected Terminology From Object Mechanics in Slovak and German*) serves as a combined translation and explanatory dictionary that provides basic terminological and conceptual information from the

field of object mechanics. It is an outcome of the above mentioned research project. The theoretical preconditions explained in the previous part of the article (e. g. heterogeneity of the information sources used reflected in the content of the course book, emphasizing reasonable interconnection between the specialized content and language competences at the appropriate level of difficulty, principle of balance) have been practically applied in order to prevent any unsystematic, intuitive process of creation of educational materials, thus providing a high quality project outcome. The publication contains a set of selected specialized terminology accompanied by brief definitions, typical properties, and internal division of the given term (if applicable). Foreign language competence is further supported by the section containing related terms and collocations that complement each term in its context. Information structured in this way is always presented in both Slovak and German languages. The mirror positioning of the respective texts also helps the reader get oriented. Here, an example of how a specialized term is provided in the publication can be found (*system of bodies*).

8. Conclusion

Effective mediating of specialized knowledge in a foreign language is nowadays considered a natural part of a contemporary university education, therefore it requires the availability of adequate educational materials. In the text form these are characterized by their specialized content and specific features related to the way such content is mediated using typical strategies. For the creation of quality materials, it is necessary to consider not only knowledge about text as a medium and specific features of the transfer of specialized information, but also to follow certain carefully selected and theoretically supported principles, thus avoiding random or intuitive approaches. In this article, one of the possible ways this task can be tackled was demonstrated based on the example of educational materials that were created in compliance with the relevant theoretical concepts, principles, and methods. Subsequently, the educational materials that were created using these principles and methods determined based on the theoretical background were presented as the outcome of the research project.

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