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THEORETICAL ISSUES IN TEACHING READING RESEARCH AND THEIR IMPLICATIONS ON THE DEVELOPMENT OF PROFESSIONAL READING COMPETENCE

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Abstract. *The objective of enhancing engineering students' reading skills may be achieved by utterly relying on research-based knowledge on the nature of reading, and mingling it with methodological approaches relevant to the teaching context. The current article gives a general overview of the evolution of teaching reading research, reveals the predominant reading and comprehension models, and unveils their implications on reading instruction within the ESP course.*

Keywords: *professionally-oriented reading, models of reading, professional reading competence, specialized text.*

ASPECTE TEORETICE ÎN CERCETAREA DIDACTICII LECTURII ȘI IMPLICAȚIILE LOR PRACTICE ÎN DEZVOLTAREA COMPETENȚEI DE LECTURĂ PROFESIONALĂ

Rezumat. *Dezvoltarea competențelor de lectură la studenții ingineri poate fi realizată doar bazându-ne plenar pe cunoștințe solide, fundamentate științific, ce țin de natura lecturii, corelate cu abordări metodologice relevante contextului de predare. Articolul dat propune o privire de ansamblu asupra evoluției cercetării în didactica lecturii, prezintă modelele predominante de lectură și comprehensiune, și în final, relevă implicațiile lor practice în predarea lecturii în cadrul cursului Limba engleză – limbaj specializat (LELS).*

Cuvinte-cheie: *lectură orientată profesional, modele de lectură, competență de lectură profesională, text de specialitate.*

Knowing how to read a technical text effectively is an essential skill for a modern engineer. However, language teachers should not assume that advanced reading ability is inherent in first-year students or that they will automatically achieve this proficiency over time. Rather, ESP teachers must address this issue, primarily, based on conclusive theoretical and methodological knowledge of the reading process adapted to the needs of the students and the institutional context.

Prolific research of both the concept of reading and the methodology of teaching reading has modified the perception of society to the reading process itself. It has evolved from a stigmatized *passive* process to be later recognized as an *active* and fluent one, in which the reader “extracts” meaning from the text [2], and more recently, to be seen as an *interactive* process, in which the reader “negotiates” meaning [17, p.22].

Since the 1960s, when the behaviorist approach to language teaching was still dominant, remarkable advances in teaching reading research have been made. There have been generated numerous succeeding theories of reading, all being influenced by the most prominent theories of learning, including N.Chomsky's theories of language acquisition – Universal Grammar (1957, 1959), Language Acquisition Theory (S. Krashen, 1982), The Zone of Proximal Development (L.Vygotsky, 1987), Language-Based Theory of Learning (M. Halliday, 1993), etc. Consequently, the replacement of the behaviorist paradigm based on stimulus-response theories (E.Thorndike, B.Skinner, I.Pavlov) occurred naturally as a result of the launch of cognitivist theories (J.Piaget, J.Bruner, R.Gagné), the 1970s) and constructivist theories (based on the concepts of J.Deewey and L.Vygotsky, the 1980s) [9, pp.34-42].

As a result of two major transformations, one dictated by changing institutional needs in teaching English as FL and the other related to changing views on reading theory [6, p.377], old FL teaching practices have given way. However, our current understanding of this process invalidates the perception of reading as a tool in the development of translation skills (grammar-translation method, late 19th - mid-20th century) or as a reinforcing element in oral instruction (direct/audiolingual methods, the 1960s).

In academic settings the reading skill is a means of access to authentic literature, particularly to domain-related knowledge. At the same time, the ESP teachers are aware that learning from textual sources in FL (comprehending and interpreting complex conceptual information) is a challenging skill to master for most of the students.

Correspondingly, due attention needs to be paid to the nature of the reading process, the reading models, which will shed light on the optimal way of developing professional reading competence by the engineering students.

Models of Reading

Current research is overwhelmed by the abundance of theories of the reading process. Most researchers attempt to create a general understanding of the reading comprehension process by means of reading models. *Bottom-up*, *top-down* and *interactive models* represent metaphorical generalizations that derive from comprehension research.

The *bottom-up* approach is usually associated with behaviorism or the traditional approach to reading, in which the reader begins by recognizing graphic stimuli from printed words, decodes them into sound, recognizes words, and decodes meanings, in that order [1, p.17]. Bottom-up models assume that all reading follows a mechanical pattern in which the reader creates a piece-by-piece mental translation of the information in the text with little interference from the reader's own background knowledge [8, p.25].

So, the reader's role implies a passive decoding of the text in a linear manner, while the teacher's role is to teach reading through „separately defined” comprehension skills [11, p.67].

On the other hand, the top-down or „psycholinguistic model” is a conceptually driven model with an emphasis on the prediction of meaning based on the reader's knowledge. It is the concepts that generate a search for data or words to confirm these predictions, as M.Sheridan points out [Ibidem].

The top-down approach owes much to the works of K.Goodman (1969, 1982) who called reading “a psycholinguistic guessing game”, as well as to those of F.Smith (1971, 2004) who argued that reading comprehension is “making sense of the text” based on the reader's background knowledge and experience [12]. This model assumes that readers are not passive decoders of letters and words; on the contrary, due to the knowledge the readers bring to the text, they are active constructors of the text meaning. Consequently, when the reading/learning material far exceeds both students' background knowledge and their ability to understand the overall meaning of the text, they feel demotivated to pursue the effort.

The models of reading that emphasize the centrality of the background knowledge in reading comprehension are known as *schema theory models*. According to the concept of schema (sing.) introduced by Jean Piaget in 1926, as experiences take place, people's schemata (pl.) change and modify. Schemata, according to adherents of schema theory, represent a network of information (knowledge, experiences, beliefs, etc.) stored in the mind that acts as a cognitive filter for incoming information and retrieval of the existing one. The underlying assumption of schema theory is that a text/script does not carry meaning by itself; it is the reader's background knowledge that gives the text its meaning. The closer the match between the reader's schema and the text, the more comprehension occurs [17]. Thus, top-down approaches emphasize the importance of schemata and the reader's contribution to overall reading comprehension.

Nevertheless, many psychologists and psycholinguists in terms of their adequate characterization of the reading process challenge both approaches bottom-up and top-down. For instance, one issue concerns the applicability of top-down model to less proficient readers, another one questions whether the sequential decoding of graphic-phonemic-syntactic-semantic systems is applied by more advanced readers. Although further studies need to be conducted to clarify the issues stated, there is a general consensus among reading researchers regarding the importance of background knowledge in reading comprehension. “Background knowledge is essential for all manners of inferences and text model construction during comprehension; it boosts comprehension when texts relate to well developed disciplinary knowledge of the reader; it is important for disambiguating lexical meanings and syntactic ambi-

guities" [7, p.50]. On the other hand, the significance of the bottom-up model cannot be underestimated, since the meanings activated by successful word recognition are the building blocks of subsequent comprehension processes. Often the two models are presented as being in opposition to each other, but to some extent they deal with different aspects of the same phenomenon; ultimately, "a complete theory of perception will need to encompass both bottom-up and top-down processes" [16, p.96].

The interactive models of reading are the apparent compromise to satisfy everyone. Respectively, "word recognition needs to be fast and efficient; and background knowledge serves as a major contributor to text understanding, as does inferencing and predicting what will come next in the text" [8, p.26]. In interactive models, each component of the reading process can interact with any other component, either 'higher-up' or 'lower-down' [1, p.18]. According to K.Stanovich who developed *The Interactive Compensatory Model*, word recognition is central to the overall reading process. The phonological representation serves as an access code in working memory for text integration processes that construct meaning [15, p.442]. When less proficient readers fail to recognize words rapidly and accurately they tend to use top-down knowledge to compensate for deficits, subsequently, the comprehension may be distorted.

The Reading Comprehension Process

Literacy theorists have always been concerned with the process of reading and how reading comprehension occurs. Soto et al. argue that comprehension consists of "a set of skills that the subjects invoke to generate a mental representation of the text that is sufficiently coherent and rich enough to adequately understand the material that is being read" [14, p.2]. According to N.Duke and J.Carlisle, *comprehension* is a truly constructive process [4, p.200]. In this process, the listener/reader creates and adjusts a mental representation of the meaning of the text [10] using multiple interaction factors including the text (its language, content, structure, purpose and characteristics), the listener or reader (his existing knowledge base, viewpoints, goals, processes, strategies and skills) and the context in which the communication takes place [13].

Considered by reading researchers to be one of the most successful models of comprehension, W.Kintsch's (1988) *Construction Integration Model* captures almost all of the basic processes required for effective comprehension. Thus, according to

W.Kintsch, skilled readers comprehend a text by constructing a representation of words and ideas and their interrelationships (the text base) and integrating this information with relevant prior knowledge and goals (the knowledge base) to form an understanding of the text (the situation model) [10; 18, p.359]. The Construction Integration Model assumes that a text is comprehended in two iterative stages: 1. During the *construction* stage, the incoming text base enters working memory and retrieves potentially relevant information from long-term memory; 2. During the *integration* stage, the comprehension system assimilates the new information with the previously existing discursive model [5, pp.467-68].

Given that comprehension is a very complex and rapid set of processes in which "many abilities are well balanced and coordinated" [8, p.23], W.Graabe & F.Stoller argue that *fluent* readers manage to perform numerous operations in each and every two seconds of reading as follows: 1. Focus and access 8-10 word meanings; 2. Analyze a clause for information and form a meaning unit; 3. Discover how to connect a new meaning unit in the growing text model; 4. Check the interpretation of information according to their goals, feelings, attitudes and background expectations; 5. Monitor their comprehension, make appropriate inferences as needed, shift strategies and correct misunderstandings; 6. Resolve ambiguities, address difficulties, and critique information in the text as needed [Ibidem].

Consequently, fluent readers typically adopt interactive models in which both top-down and bottom-up processes take place in parallel, and some of the operations are relatively automatic, fast, and efficient. On the other side, with struggling readers, the reading process is slow and mostly occurs in a linear manner (bottom-up model). Overcoming reading difficulties takes a lot of instruction and practice. For this reason, the development of a research-based methodology appropriate to a specific learning context is essential.

Implications for Teaching Specialized Text Reading

The educational and research activities of university students usually aim at the mastery of a certain professional field, the formation of professional competence; therefore, reading focused on the future profession is referred to as *professionally oriented reading (POR)* [20]. In the academic environment, particularly in technical training, POR should lead both to the acquisition of content knowledge

and to the development of professional discourse and, possibly, to an increase in the qualifications of the future specialist. Thus, reading specialized texts in FL is a cognitive and constructive process generating mental schemas consisting of logically integrated informative content and contributing to the understanding of specialized structures and to the memorization of the metalanguage necessary for professional communication [3, p.25].

In order to help engineering students succeed in acquiring robust POR skills in FL, we suggest a series of reading support and awareness activities that were used as part of the pedagogical experiment conducted at TUM (2018-2019) by the author.

The research purpose of the project consisted in determining the theoretical and methodological foundations for developing an instructional model aimed at the valorization of specialized text reading from the perspective of optimization of the English language acquisition by the engineering students. The target audience of the research study were 90 second-year civil engineering and architecture students of TUM divided into two groups – experimental group and control group. The revised ESP curriculum focusing on POR skill development was addressed to the experimental group and was implemented during one semester (15 weeks). In the control group the teaching process was carried out in the traditional manner: the focus was mainly on vocabulary and speaking activities, while the reading skill development was not so paid attention to.

In what follows, the next step is to draw on cues that have been shown to be effective in facilitating students' reading of specialized texts, thereby improving long-term ESP acquisition. After studying the bibliographic sources on reading theory, we were aware that our first task was to promote the development of strategic reading among students. Thus, lesson by lesson, we followed the change of the students' perspective regarding the importance of strong reading competence in acquiring specialized discourse, while stimulating their intrinsic motivation for reading specialized literature from various sources.

In the treatment phase, the students of the experimental group were subjected to explicit teaching of pre-, during and post-reading strategies, comprehension strategies, text organization strategies, all illustrated in the methodological elaboration

„Technical Reading” [19] where reading strategies to be focused were systematized according to the three stages of text reading.

In addition, various training approaches were used:

- Selecting appealing specialized topics/ texts that could generate speaking, listening and writing activities;
- Alternating and practicing different types of reading: intensive, extensive, reading in pairs, reading outside the classroom, etc.;
- Ensuring an optimal way of teaching-acquisition- evaluation of linguistic structures, as well as broadening of students' specialized knowledge out of readings;
- Promoting the need for an increased word recognition fluency, as well as automaticity in reading comprehension;
- Emphasizing the importance of background knowledge and its activation in the pre-reading stage for a deeper comprehension of specialized texts;
- Encouraging due comprehension monitoring and correcting misunderstandings during reading;
- Conceptualizing the information from the specialized text during the teaching process and illustrating it by means of various graphic organizers, tables, other visual elements;
- Extending students' exposure to meaningful specialized texts beyond the classroom by means of projects and portfolio making on topics studied.

Conclusions

It is widely recognized among researchers and practitioners that the better the understanding of the inner reading process, the more effective teaching approaches can be selected/applied. Given that the ultimate purpose of reading is to make sense of written language, the task of ESP teachers is to identify optimal instructional practices aimed at improving FL reading comprehension within a relatively short course. In the present article we have sought to describe current research perspectives on reading comprehension while providing explanations that have real implications for ESP instructional contexts.

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