Towards a multilingual discursive competence for the Endodontics specialist

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The present communication aims at giving an account of the state of the interdisciplinary research project: *"Deficient language training: the Endodontics specialist case. Proposal for a multilingual discursive competence"* accredited by the Sciences and Technology Secretariat (Secretaría de Ciencia y Técnica) of the Universidad Nacional de Rosario (U.N.R.), at the Dentistry School in Rosario. The participants of the project are specialists of the Language Department of the Humanities School and of the Endodontics Specialization Program of the Dentistry School respectively.

FUNDAMENTALS:

The vast technological progress in the field of communication in the XX century and the disappearance of borders between countries has inserted the XXI century man in a globalized world and in a post-communicative time. The present demands new strategies to face the new challenges that are imposed.

Day after day, we see that images and words in the scientific field go through optic fiber and via satellite, thus establishing on-line communications. This implies a mastery of the language, which permits the accurate transmission of the required data.

Therefore, the ability to understand and produce scientific texts, such as abstracts, reviews, e-mails and discussion forums in the WEB in a foreign language – whether English, French, Portuguese, German or Italian - becomes an essential tool for the international scientific community.

We recognize the professionals' ability to master their own vocabulary discipline in other languages. However, difficulties arise when they need to communicate with their peers of other languages. This is because specialists usually lack the multilingual knowledge they need to be able to understand texts in two or more foreign languages and to express themselves in writing in at least one foreign language.

Teaching a foreign language at university has been restricted to the reading comprehension of specialized texts in those programs which had "Foreign Language" in the curricula, and this is still so. Moreover, some university programs are considering having a foreign language as an elective course, thus giving the students the responsibility of choice in their own learning. Therefore, the training which the university gives its graduates and researchers in this matter is inadequate, since what the university demands does not match the requirements that the human resources in science and technology demand today.

From a survey carried out with the first year graduates in the Endodontics specialization program, and through an agreement signed with the Language Department and with other post-graduate programs of UNR (specializations, master's degree programs and doctor's degree programs), we concluded that:

a) a majority of graduates lack the knowledge of a foreign language. This can be proved by the fact that the directors of such post graduate programs have started to contact the f Language Department to request the implementation of a foreign language, as this has been progressively included in such programs' curricula;

b) a limited number of specialists understand a foreign language but cannot use it to make their scientific production known in a language other than their mother tongue;

c) a minority of graduates understands two or more foreign languages but can express themselves in only one of them.

Nowadays, researchers or professionals find that their field of knowledge is continually receiving the contributions of specialists who express themselves in other languages and who resort to English as a "lingua franca" for publications or international meetings. However, the production of knowledge takes place in each specialist's mother tongue, which increases the need for a multilingual competence.

An appropriate multilingual training, such as the proposal in the present research, will permit and make it easier for the Endodontics specialists to have a fluent communication with colleagues and research centers from other countries. This will be clearly seen in:

a) exchange of training of human resources;
b) exchange of curricula and approach strategies;
c) exchange of scientific production and transfer of results in science and technology;
d) partaking of discussion forums in the Web;
e) possibility to share clinical experiences, cross-consultations and other opinions;
f) motivation to take part in distance courses.

QUESTIONS

The present research starts from a series of questions, which are addressed to determine:

1. whether the mastery of a specialized scientific text in the mother tongue favors reading comprehension in other languages;

2. whether the communicative functions inherent to the scientific discourse, such as defining, describing, classifying, etc., which are common to several languages, influence the development of a multilingual discursive competence;

3. whether linguistic competence in the mother tongue and reading competence in the foreign language favor the written production of specialized texts in a foreign language.

METHODOLOGY

In order to answer these questions, the first stage of the research project was started. It consists in the preparation of a reading comprehension test of a specialized scientific text in the mother tongue.

The selected article was "Paradigm of light and shadows in the computer-assisted endodontic diagnosis" by Dr Martha Siragusa and Eng José Mc Donnell, published in the Iberoamerican Magazine *Educación, Salud y Trabajo*, co edited by the Universidad Nacional de Rosario and the Universidad de Extremadura, Issue 1, April 2000.

From this text, a test was made based on a series of exercises and questions aimed at assessing different types of inferences, i.e., the cognitive operations which govern the meaning representation for an interpreter, who relates different statements which must be coherent.

Next, the corresponding assessment instrument was made, based on the consideration of three parameters for each exercise or answer. For example, in question I (where the relationship between the student's previous knowledge and the reading text was tested) the following considerations were made:

a) whether the students could establish the relationship between them appropriately;

b) whether the students could establish the relationship between them partially;

c) whether the students could not establish the relationship between them;

And in the case of exercise II D (where the students were supposed to infer the macrostructure or topic of a fragment from 11 items containing explicit or implicit information), the following considerations were made:

a) whether the students had enough knowledge to understand the fragment appropriately (from 9 to 11 items);

b) whether the students had some knowledge to understand the fragment appropriately (from 5 to 8 items);

c) whether the students did not have enough knowledge to understand the fragment appropriately (4 items or fewer);

Next, the statistic processing was made and the results were analyzed.

RESULTS:

Following the observation of the results we can say that:

I) as regards the relationship between the knowledge of the world and the text (KW): 64% of the group did not resort to the activation of previous knowledge. They considered neither the text title nor the fact that it was a test within the Endodontics Specialization program they were taking.

II A) semantic inference with co reference markers (SICM): here the students were supposed to establish the referents of 6 words (pronouns, demonstrative adjectives and other expressions). Only 50 % was able to establish between 5 and 6 referents.

II B) contrastive inference (COI): 93 % could find the contrasting elements without difficulty.

II C) associative inference (AI): as before, 98% of the students managed to establish associative relationships between the parts without any difficulty.

II D) Fragment macro structural inference with copy of explicit and implicit literal information (FMI): this exercise consisted in the search of specific information to answer 11 items, 8 of which implied searching for and copying literal information and the other 3 required answers which were implicitly indicated and thus, posed greater difficulty. Therefore, 83% of the students could understand only the explicit information in the article and showed difficulty when faced with a deeper understanding in order to obtain the right answer. They simply remained on the text surface.

II E) contrastive inference (COI): even though two thirds of the students managed to contrast the true / false (T / F) statements appropriately, one third showed some difficulty in establishing all of these inferences. It should be noticed that the inferences tested in II B), C) and E) are the simplest to make and they only require the student to search for specific information in the text.

II F) macro structural or thematic inference (MI): this was one of the most important questions to show the right understanding of the text. It consisted in highlighting 5 key words within the text, which permitted the reconstruction of the concept map present in the scientific article dealt with. Several students did not know the meaning of "key word", and requested an explanation of the exercise. The professor explained that the exercise consisted in including 5 relevant words which, for example, permitted searching for the topic of that article in the Internet. It is worth mentioning the degree of difficulty posed by this question, since five of them did not even answer it, and most of them could establish some words such as "X-ray", "telematics", "computing", "diagnosis", but they failed to establish the link to the specific field of endodontics or the more general field of dentistry.

II G) <u>super structural inference (SUI):</u> this question aimed at establishing the type of discourse used when writing the article. It is an expository text with descriptive sequences. Therefore, those answers, which indicated reference to descriptive discourse, were considered partially correct. Nevertheless, the resulting percentages showed the students´ substantial lack of knowledge of the linguistic structure characteristic of the scientific discourse.

II H) <u>syntactic inference (SI):</u> the analysis of the results showed linguistic difficulties in accordance with the previous question. It was a text written in the passive voice, which is a usual feature of the scientific discourse. As regards the high percentage of right answers, it should be noticed that the students asked many questions about this item, and that the professors' explanations could have contributed to the correct answer.

The lack of knowledge of the topic was manifest in one of the answers where the students understood that they had to determine whether the participants of the research study of the scientific article had an active or passive attitude towards it.

II i 1 and 2) <u>causal inferences (CAI):</u> here the students were supposed to infer from the text the reasons for some important situations in the experience described.

Instead of searching for them in the information in the text, they answered them according to their own logic, which led a large number of participants in the survey to a totally or partially wrong answer.

II i 3) <u>designation inference with text hints (DI):</u> it aimed at understanding the objective of the research present in the article. Even though most of the results were correct, 30% of the students found it very difficult to give an explanation.

II i 4) <u>elaboration causal inference which implies knowledge of the world (EI):</u> this item sought to establish the relationship cause-effect present but in this opportunity a personal interpretation of the question was required. The students' answers were varied, and they did not show a critical reading capacity of that research.

II J) <u>macro structural or thematic inference (MI):</u> this item, like the one referring to the key words, also aimed at establishing the main idea of the research work analyzed. Even though the percentage of correct answers was higher in this case, the number of partially correct or incorrect answers is significantly higher since the students were supposed to get a global understanding of the text. This high number of answers with difficulty was expected due to the high percentage of wrong answers in the case of the search for key words.

CONCLUSIONS:

- Questions II B-C-E with their high number of correct answers show that the students can extract the explicit information from the text;
- as regards question II D, the part corresponding to the search for explicit information was easily detected in accordance with the previous conclusion. Conversely, the implicit information in the same exercise could not be appropriately extracted. Such difficulties were also shown in the search for specific information (exercise II A);
- the lack of mastery of linguistic knowledge, as regards the different types of discourse and the syntactic structure, which prevails in scientific texts, was evident in questions II G and H. These questions aimed at testing the degree of linguistic knowledge of the Endodontics specialist. Moreover, the difficulties in writing answers and the spelling and syntactic mistakes were significantly detrimental to the requested answers, and affected the correct explanation of ideas;
- about this point, it seems natural that the specialists lack knowledge in this aspect. However, since they are regular readers and potential producers of scientific texts, they should be aware of the basic structures for this type of discourse in order to become effective readers / writers;
- the respondents faced many difficulties when they had to answer exercise II i 1 and 2, and to a lesser degree II i 3, since their answers focused on common sense and not on the information supplied by the text itself;
- paradoxically, when asked to think of an answer which required a subjective interpretation (exercise II i 4), they failed to undertake a critical reading of the text;
- exercises I and II F, which aim at testing understanding of the content of the scientific article, reveal absence of an effective reading skill which permits grasping the actual meaning of the text;
- question II J, which also reveals the same type of macro structural inference, although to a lesser extent, also showed a high degree of impossibility to summarize the main idea of the text.

To summarize, the students showed their skill to interpret specific information explicit in the text, but they showed the lack of reading and writing strategies which might permit them to become effective readers / writers in their mother tongue and in their own field of study.

From what has been stated, we understand that such lack of formal mastery of the reading comprehension and writing skills in the mother tongue could have a similar

impact on the field of foreign languages. The analysis of such impact will become the core of the second part of our research.

QUESTIONS																							
I (CM)			II																				
			A (ISMC)			B (ICO)			C (IA)			D (IMF)			E (ICO)			F (IM)			G (ISU)		
C	R	I	C	R	I	C	R	I	C	R	I	C	R	I	C	R	I	C	R	I	C	R	I
31%	5%	64%	50%	48%	2%	93%	-	7%	98%	2%	-	17%	83%	-	69%	31%	-	24%	-	76%	28%	36%	36%

II												
H (IS)			I									J (IM)		
			1/2 (ICA)			3 (ID)			4 (IE)					
C	R	I	C	R	I	C	R	I	C	R	I	C	R	I
64%	-	36%	7%	21%	72%	69%	5%	26%	48%	24%	28%	48%	21%	31%

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