



Pragmatic analysis of a textbook on oral histology as resource for the teaching process

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Books, and especially textbooks, have been the teaching material par excellence (Parcerisa 1996). Consequently, one of the teaching roles is to be focused on the necessary and sufficient competencies to be able to appreciate with sound basis these tools that are the main participants of the teaching process. Thus, a learning process is required in order to select, adapt or create and evaluate materials. This professional activity demands specific training, which should be contemplated in the teacher training curriculum (Martínez 1992). Carlino maintains that it is necessary to re-conceptualize what is at stake when students have to understand the textbooks provided by university. The main theory in his work does not only concern the fact that students getting to university are ill-prepared from their previous secondary school training; it also concerns that when getting to higher education they are required to change their identity to thinkers and text analyzers (Carlino 2003).

This work is oriented to establish an analysis of the textbook recommended by the department of Histology II, of the Faculty of Dentistry of the National University of La Plata. Even though the syllabus of the before mentioned discipline contains abundant general and specific bibliography, the textbook selected for study is the most used in Spanish-speaking countries. It is developed within the framework of the research project "The teaching of histology in university training in dentistry: an epistemological and pedagogical analysis of resources, didactic material and textbooks used in training practices" of the Faculty of Dentistry of the National University of La Plata. In this Project the following specific objectives are mentioned:

- To perform an epistemological and pedagogical-didactic analysis of textbooks selected and used for teaching histology in dentists' training.
- To evaluate the production, mediation and orientation to the student on the knowledge contained in textbooks, didactic resources and observation materials.

According to these objectives we decided to interpellate textual language, aiming at its formal characteristics, contents and communication potential, in order to make transparent and evident the hidden intentionality that facilitates teachers' mediation through the textbook that is hereafter described:

Identification data of the selected textbook:

- Title proper: Histology, Embryology and Oral Tissue Engineering.
- Area or discipline: Histology. Embryology. Tissue Engineering. Odontogenesis.
- Main responsibility: María Elsa Gómez de Ferraris, Antonio Campos Muñoz.
- Publishing-related data:
 - Publishing place: México. Publisher: Editorial Médica Panamericana, Date of publishing: 2009. Reference to edition: 3erd.
 - Physical description:
 - Extension: Xiv, 468 p. Size: 28 cm. Supplementary material: 1 CD-ROM
 - ISBN 978-6077743-9.

CASE STUDY METHODOLOGY

The varied existing classifications, the diverse use of textbooks and the specific discipline contents have compelled us to elaborate an innovative methodological design. Confirming the complexity of the textbook has thus led us to establish a specific taxonomy that enabled a detailed analysis in the present work. This design attempts to meet a need in the study of dentistry textbooks.

Three levels have been defined: **level of pragmatic analysis, level of contents analysis and level of formal analysis.** The division into levels is clearly a methodological division since the information corresponding to each level appears in textbooks in an interrelated way. In effect, a relation of mutual conditioning exists between the levels and parameters shared in the complexity of the evolution of the textbook for dentistry immersed in the learning processes.

In previous works ^(Llompart 2014), we concentrated on the study of formal and contents aspects. In this opportunity, we deal in detail with the level of pragmatic analysis, since an epistemological and pedagogical-didactic analysis that evaluates the production, mediation and orientation of the textbook to the student, will contribute to reveal its **communication potential.**

Level of Pragmatic Analysis: We considered the purposes, uses of discourse and context where the communicational relationships and the teaching model intended to be used in the classroom are established. We are referring to who writes it, how it is written, who it is written for and who really uses it, as well as in which context the communication process is established, as pointed by ^(Sacristan 1991) and ^(Santos Guerra 1999).

Pragmatics is considered among the linguistic studies as the area that studies the language in use. Studies on Pragmatics appeared around the 30's, introduced by Morris within the triad semantics, syntax and pragmatics in the field of semiotics, this being defined as the science of the signs, in relation to the speakers and the communication context.

Applying these concepts to our purposes, we established that the pragmatic level expects to evidence the connection in the context of the teaching learning process, in the relationships established among all the actors and in the process development where the textbook takes part and also as communicating element between the formal and contents levels of analysis.

The complexity of the analysis increases if we also consider the diversity of actors that intervene in the textbook to make corrections, translate or change the contents or way of organizing them, as well as the transformation into oral discourse at the moment of teachers' mediation. (Fairclough 2008) confirms this characteristic when assuming a centered position in action – pragmatics – where discourse configures a complete process of interaction that includes, apart from the text, the process of its production, the textbook being its product, and the process of interpretation, the textbook resulting to be a resource". Consequently, it is imperative to analyze discourse in order to investigate beyond contents. In this sense, Bernstein emphasizes that discourse is a category where all individuals position themselves around power and control relationships among groups, originated by the principle of social division of work and its social practices. He outlines three types of rules that particularly occur in pedagogic discourse:

- 1) Distributive rules, which mark and designate who has enough reputation necessary to transmit specialized and pedagogical communication. In our particular case, we are referring to authors, who can give a true discourse. We notice that for what is mentioned in the Preface to the third edition where writers take sides: "... *The experience of these years and the comments and suggestions received by numerous colleagues and readers from Spain and America...*".
- 2) Recontextualizing rules, which imply the insertion and reformulation of a type of knowledge in a special situation. An actor, - teacher – who "*appropriates*" of and "*re-focuses*" on other discourses to constitute "its own order" based on the suitability of individuals according to authorship-related responsibility. They are rules that create a special and distinctive order as well as an identity of the case study analyzed that prepare specific competencies and skills in discourse itself and in the systematization of text contents. Thus, for example, the incorporation of a section referred to as "... *the new paradigm of histology, tissue engineering, at the end of each chapter...*".
- 3) Evaluation rules, which regulate the social relationships of pedagogic textbook transmission-acquisition and which oblige the teachers of each subject to recommend reference books and consulting books in the bibliography and the teacher who uses it in the classroom and transforms it into context: "...*contributing, according to our judgment with notable success, to the training in Oral Histology and Embryology both of young undergraduate students and researchers as well as professionals ...*", (Preface to the third edition).

They also comprise the ideal student who the text has been created for and the real student in the teaching-learning process; all of them in relation to the message-medium in the sense expressed by Mc. Luhan. "The message is the medium" in the process of communication, accounts for the fact that the content of the Means of Social Communication is not enough to justify its social impact.

A simple observation of the social reality reveals us that the impact of the Means of Social Communication, among which we would dare include school textbooks, is not consequence only of the nature, quality of its formal characteristic elements and its disciplinary contents, but other multiple factors intervene that condition the processes and work from the inside of the media.

Another point of view to reach the analysis of text discourse can be established by identifying the communication strategies used and their resulting objectives. Objectives are interrelated so that they provide the totality of the structure of textbook discourse with higher communicational quality and they are expressed through the following strategies:

Assertiveness strategy: It is used as communicational strategy, in the sense of affirming truths. This concept makes reference to two types of behavior that turn out to be opposite: passivity and aggressiveness. Experts in communication associate assertiveness with **maturity**. In this way, a communicative bond is established that does not become aggressive to the reader and which is consequently authorized word, which allows expressing their thoughts and intentions and, at the same time, defending their interests.

For example, we can quote in the "Preface to the third edition" in the textbook that is the target of our analysis: "*The book maintains its assertive and hierarchical character as distribution is concerned ...*". Likewise in "*Acknowledgements*", p. IX:

- New impulse, emphasizing the advancements of tissue engineering.
- Incorporation of new collaborators, new cases and recent experiences.
- Contributions from the different branches of the specialization and contributions of young people who teach and do research.
- Coordination in updating provided by teaching experience (mediation with students) in Argentina, Spain and Latin American students.
- Expectations for new experiences and enthusiasm for the future.
- Contributions in contents and iconography.
- Shared efforts and hopes.
- Addressed to graduate and postgraduate readers who will greater benefit by pedagogic innovations.

Communication Strategy of Hierarchical Character: it refers to an order established according to the importance of each branch of knowledge in relation with the other branches of knowledge. The analytical hierarchy process is a particularly important subject matter in the quality field, and it is taught in many specialization courses. Applied to the world of ideas, we use hierarchies to help us acquire detailed knowledge of the complexity of reality: we give reality a structure according to the parts in which they are constructed, and in turn we give these a structure according to the parts that constitute it, opening in the hierarchy as many levels as we desire. In each step we focus on understanding only one component of the totality, temporarily without taking into account the other components of this and of all the other levels. As we advance in this process, our understanding of any complex reality we are studying increases. For example, in our study case of discourse we identify the following in the "*Preface to the third edition*": "*...the introductory chapters, essential to consolidate the subsequent histological concepts and descriptions that constitute the doctrinal body of the book.*" And "*...two independent chapters, on the one hand, with conceptual and terminological basis ...*" "*... to be able to subsequently apply it to basic investigation or clinical practice ...*".

There exist other tools at the time of planning text discourse, with the purpose of organizing the message and defining its effectiveness. We further detail different means of expression identified in the study case:

- ⇒ **Descriptive text:** To describe something is to say what it is like. Objects, people, places, processes, feelings and the like can be described. The main difference between narration and description is that in the latter time is stopped. The function of the descriptive text is to inform about the state of things according to its spatial structure.

- It is formed by state statements.
- It preferably uses attributive sentences, adjectives, noun complements and adverbs of place.
- It usually appears within the structure of other types of text.

For example: *"We will describe below the structural pattern of epithelium and chorion ..."*, p. 139; *"Minor, secondary or accessory salivary glands are distributed in the mucosa and sub-mucosa..."*, p. 178; *"The pulp chamber is a central cavity excavated in the middle of the dentine ..."* p. 233; *"Dentine presents a white yellowish colour, which may vary from person to person..."*, p. 257; *"In the dental neck, enamel relates to the gum through the dentogingival junction..."*, p. 293; *"In the periodontal ligament different types of fibers are found: collagen, reticular, elastic, oxytalan and elaunin fibers."*, p. 374; *"The portion of alveolar bone that directly limits the alveoli, namely, that in which periodontal fibers are inserted, belong to the periodontal insertion "*, p. 381.

- ⇒ **Argumentative text:** It manifests ideas, expresses opinions, defines them and offers them for discussion. Authors go back to that idea to propose it to the scientific community. We can quote below the following examples in the discourse to be analyzed: *"... in experiments carried out on rodents, Fisher proposed that ..."*, p. 144; *"The origin of Merkel 's cells is yet being discussed ..."*, p. 152; *"It has been suggested that communication links might participate in a synchronization of differentiation..."*, p. 149; *"It has also been suggested that Merkel's cell ..."*, p. 152; *"For some authors, keratinization of the oral mucosa..."* p. 145; *"Our studies with scan electron microscopy of the oral mucosa surface ..."* , p. 146; *"The study of keratinocytes in culture has demonstrated ..."*, p. 146; *"The spinal cord might be formed by all the classical strata..."*, p. 147.

It is also worth emphasizing that among arguments there appear opinions, as well as one's own and other authors' experimentation, which lead to doubt and discussion, highlighting the didactic power of the text.

- ⇒ **Text and temporality:** Another important characteristic to analyze text discourse is given by temporality. This component expresses the location of the message in time and organizes discourse in time, as well as it highlights the updating degree in the scientific level: *"These days integrin separation is considered ..."*, p. 142; *"Today, it is suggested..."*, p. 152; *"It has recently been suggested that the final process of keratinocyte differentiation..."*, so as to mention some examples.

- ⇒ **Diverse approaches:** An approach constitutes a manner or form aimed at satisfying specific needs. When addressing a scientific subject it is usual to do so from different perspectives. In the context of our investigation we refer to this characteristic as approach. Every histologic approach (way of valuing or

considering a content and, consequently, of dealing with the problems related to it) is determined in the field of knowledge to which it is intended for, so that the reader can orient every notion in a determined thematic conceptual framework. The use of this criterion widens in a significant way the usefulness of the textbook, which a posteriori will be applied either to the areas of investigation or to the clinical practice by means of the histopathological diagnosis.

In the field of our investigation we can distinguish some examples quoted below:

Morphological approach:

"The process of enamel aging is characterized from the morphological point of view by progressive wearing..." , p. 327.

Histodynamic approach:

"From a histodynamic perspective in the proliferative epithelial unit there may..." p. 147.

Histochemical approach:

"By means of different histochemical techniques, which include electron microscopy ..." , p. 156.

"As regards variations in the chemical composition of enamel, in aging..." , p. 328.

Biopathologic approach:

"With relation to epithelium, physical, bacterial, fungal and viral agents that give origin to diseases of the oral mucosa..." , p. 171.

"With relation to pathologic alterations, dentine, like enamel and cement, is affected by tooth caries..." , p. 286.

Preventive approach:

"With relation to dental therapeutics, one of the fundamental aspects to be considered is the prevention of irreversible damage to the pulp ..." , p. 286.

"Acute or chronic exposure to fluoride during tooth development originates important alterations during amelogenesis..." p. 328.

RESULTS

In the analysis of text discourse, distributive, recontextualizing and evaluation rules were identified, which provide the text with characteristics of veracity, a special and distinct order, and a high degree of commitment on the part of the creators.

Likewise, assertive and hierarchical communication strategies impose a character of maturity and authorized word as well as an order which relates knowledge for a better understanding.

Also, we observed the use of others tools such as:

- 1) Descriptive text: it is highly useful in the teaching-learning process of histology to account for the different spatial structures;
- 2) Argumentative text: where opinions are provided and their discussion is encouraged;
- 3) Temporality: which emphasizes the degree of discourse updating, element of great importance in the scientific field.

As the variety of proposed approaches is concerned, they grant a relevant aggregate value for university training of the future professionals.

Consequently, the book which was the objective of our analysis presents a communicative and textual approach that basically has in mind who it is written for and which its objectives are. These objectives materialize through an adequate planning that brings together communicational strategies and other discourse tools with efficiency. It makes use of conventions and considers strategies and tactics that combine their application coherently, creatively and according to the distinctive contents (knowledge) of Histology and Embryology, which determines the success of the production. The integration within the text of the planning purposes and objectives and the subsequent application of rules and of communication and cognitive strategies, vocabulary, previous acquisition of didactic reading that favors the reading comprehension skill.

CONCLUSIONS

We conclude that the analysis procedure employed represents a novelty in the field of analysis of curriculum materials, since the principles on which they stand are simple and provide objective parameters that allow identifying, relating and comparing among relevant aspects.

Also, it constitutes a tool that makes the selection of the textbook to be included in the bibliography easier. It likewise arises from the present study that the textbook analyzed is highly complex, since not only does it limit to presenting the state of the discipline, but it also provides arranged information and presents an organization oriented to be developed with the teacher's coordination. As Jiménez Valladares points out... "The transition experimented throughout these years could be summarized in the transformation of the book that implies «content for students» into the book that implies «guide notes for teachers»."

Although the textbook in question has been properly planned, and since it belongs to the field of scientific literature, there is evidence of a quantity of elements that makes comprehension difficult for students when accessing the book. It is consequently imperative to provide students with tools, orientation, guidance and coordination to improve the access to knowledge and thus have an effective approach to scientific knowledge so that they may become autonomous individuals, with reflection and critical thought, who may develop skills enabling them to re-elaborate concepts and so become active participants in the learning process. Thus, knowledge on textbooks should be reflected in didactic strategies for teachers and students in the classroom. Methodology might enable a proper application to the analysis of oral histology and embryology textbooks and generate highly useful knowledge for the teaching-learning processes.

We also consider the following emerging problems as a challenge for the future: the training and guidance of teachers in the design, selection and use of textbooks in integrated relationship with the curriculum development tending to improve the quality of teaching in our universities.

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