HISTORY OF VETERINARY SCIENCE AND INNOVATIONS IN TEACHING: A PROPOSAL FROM THE UNIVERSITAT AUTÒNOMA DE BARCELONA (UAB)

HISTORIA DE LA VETERINARIA E INNOVACIÓN DOCENTE: UNA PROPUESTA DESDE LA UNIVERSITAT AUTÒNOMA DE BARCELONA (UAB)

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INTRODUCTION

The profound transformation in the teaching of veterinary science being imposed by the European Higher Education Area (EHEA), envisaged in the Bologna Declaration, have yet to manifest themselves clearly in the teaching off the History of Veterinary Science. Although the holding of regular conferences and the growing number of History of Veterinary Science associations exteriorise the interest that exists in the historical aspects of the profession, this process, with very few exceptions, has not led to the provision of specific teaching staff for this material.

Nonetheless, the current unease in this field, the guidelines of the white book for the qualification of degree in Veterinary Science, comparison with syllabuses of "sister" disciplines and the declarations and commitments made by certain academic authorities allow for a degree of optimism as far as the future is concerned. This context has led to initiatives in favour of the subject's inclusion in a number of Spanish faculties, thereby anticipating a new scenario which indeed seems to be irreversible. The awarding in 2005 of the first permanent post, devoted entirely and specifically to the History of Veterinary Science, in Madrid's Complutense University, clearly represents a before and after on the road to the definitive institutionalisation of our field of knowledge. At the 11th National Congress on the History of Veterinary Science, held in Murcia from 20th to 22nd of October, 2005, attention was drawn to the need to create a specific section in these scientific meetings where all the aspects related to teaching innovation and curricular change could be dealt with; a demand aimed at consolidating and developing the discipline within the Spanish university framework[1].

With the aim of making this aspiration effective and adapting it to the new situation, staff teaching the subject "Introduction to Veterinary Science: history and documentation" offered by the UAB – the *Universitat Autònoma de Barcelona*'s Faculty of Veterinary Science would like to present to this world congress a teaching model tested during the 2005-2006

[1] Sánchez de Lollano Prieto, J. (2005) La docencia de la Historia de la Veterinaria en España: pasado, presente y futuro. In: *11th National Congress of the History of Veterinary Science*, Murcia, Asociación Murciana de Historia de la Veterinaria, pp. 57-69.

academic year, which introduces radical changes compared to the traditional method, both in terms of its methodology and of its content; an alternative which is hoped to be contrasted in the future with new proposals which will allow us to compare, debate, reach a consensus and choose the best of each of them.

It's worth mentioning at this point that the Faculty of Veterinary Science is participating in the *Universitat Autònoma de Barcelona*'s Degree Qualification Pilot Plan (2005-2008) with the aim of transforming its syllabus into ECTS (European Credit Transfer System) credits in advance of the new rules. Thus the teaching of this subject is in line with the curricular change of studies corresponding to the degree in veterinary science and aims to position itself both within the perspective of "learning how to learn" and the process of convergence with the European university area envisaged in the Bologna declaration. In the same way, it puts forward the need for the students to have early contact with the faculty's teaching system and with direct attention to the animal and its environment[2]. In consequence, the subject provides opportunities for students to acquire knowledge and develop skills and attitudes related to the practice of the veterinary profession in the community in which they will work, as well as to the contexts of direct attention to the student and to the public in general in the framework of the Faculty itself.

2. DESCRIPTION OF THE SUBJECT "INTRODUCTION TO VETERINARY SCIENCE: HISTORY AND DOCUMENTATION"

This subject, taken during the first term, is offered in the UAB under the label "campus subject". This means that it is open to students of all this university's degree courses who can complete free configuration credits in their respective curricula. Its content is arranged into four ECTS credits, equivalent to one hundred hours of student work (25 hours per ECTS credit).

The teaching team is made up of lecturers from the faculties of Veterinary Science and Medicine, all of them attached to the Centre of Studies of the History of the Sciences, an institution that promotes teaching and research in the area of the History of Science at the UAB[3].

3. ORGANISATION OF TEACHING

The adoption of the European Credit System (ECTS) involves recognising the student's real work and includes the time devoted to lectures, hours of study, tutorials,

[2] Within the field of biomedical science it has become clear that having early contact with health and disease problems helps students in their academia training and in developing attitudes that are beneficial to their studies and future professional practice. In addition, it has also been demonstrated that this early contact leads to students becoming interested in aspects of their training that are related to the needs of society. Martínez Vidal, À.; Molero Mesa, J. (2005) Inmersión precoz del estudiante de medicina en la práctica asistencial a través de los Centros de Atención Primaria (CAP): una experiencia docente innovadora para el profesional del futuro. *Educación Médica Internacional, 8*, nº 3, 165. Littlewood, S.; Ypinazar, V.; Margolis, S. A.; Scherpbier, A.; Spencer, J.; Dornan, T. (2005) Early practical experience and the social responsiveness of clinical education: systematic review. BMJ, 331, 387-391. Dornan, T.; Bundy, C. (2004) What can experience add to early medical education? Consensus survey. BMJ, 329, 834-840.

[3] The teaching staff consists of Dr. José Manuel Gutiérrez García and Dr. Martí Pumarola i Batlle (History of Veterinary Science Unit, Faculty of Veterinary Science) and Dr. Jorge Molero Mesa and Dr. Àlvar Martínez Vidal (History of medicine Unit, Faculty of Medicine).

seminars, essays, practical work or projects, as well as those demanded for the preparation and sitting of examinations and evaluations.

The teaching of the subject is structured into three parts that go to form the student's timetable in an unequally distributed way: "History of Veterinary Science" with 28 hours, "Scientific documentation" with 18 hours, and a 54 hour "*Practicum* of introduction to the veterinary world". In addition, the student has the option to carry out a work piece on a particular aspect of the history of veterinary science in a voluntary and individual way; its positive evaluation leading to an improvement in the final mark. Let us now examine each of these sections in detail.

3.1. History of veterinary science (28 hrs of work per student)

3.1.1. Aims: In this section the student will be able to acquire a view of how the veterinary profession and science have been configured over time, not as an independent and isolatable discipline understood in the modern sense, but rather as a system of knowledge open to all the fields of natural and biomedical sciences. Thus, the students will be able to contextualise the concepts of health and disease in the framework of the paradigmatic scientific thought of each historical period. By the end of the module, the students should consider veterinary science as a cultural product united with the development of other sciences, and conditioned, from its own roots, by religion, society and the uses and customs of the culture in which it develops.

Due to the almost absolute hegemony of technical and biological concepts in the current veterinary curriculum, the idea is to ensure that students are capable of understanding, from a general and integrating standpoint, the scope and limitations of each of the disciplines that make up this curriculum, taking into account the historicity of current veterinary knowledge and of the health structure. In addition, students will have to conceive the role of the veterinary surgeon as a critical and supportive agent of social change, in the interest of the health of the community.

3.1.2. Content: This is presented and developed in the classroom by means of fourteen one-hour lectures (14 attended hours). The number of theory sessions has been markedly reduced compared to the previous year in accordance with the guidelines of the EHEA and the National Agency for the Evaluation of Quality and Accreditation (NAEQA). This latter organism, whose priority aims include guaranteeing the quality and competitiveness of the Spanish university system, stresses in one of its documents the excessive number of lecture hours given in Spanish universities and the lack of variety of other educational activities, above all when compared with their equivalents in the majority of European states[4].

3.1.3. Teaching methodology: In order to attain the objectives of this part of the subject, a method was implemented designed to replace the traditional pedagogical model, based on the lecturer's "teaching" and limited to measuring the retention of the information and the capacity of evoking it, with another focusing on "learning" and on the encouraging of an active student attitude. The new didactic procedures were implemented with the support and advice of the Medical Education Unit (MEU) of the UAB's Faculty of Medicine, directed by Dr. Luis Branda.

[4] ANECA (2004) *European Convergence Programme.*
http://www.aneca.es/publicaciones/docs/publi_credito%20europeo.pdf

One of our intentions was to ensure that students did not spend all their time in lectures taking notes, with the result that the purely informative elements expounded by the lecturer were made available to the student in the specific virtual area (Virtual Veterinary Science) that the faculty of Veterinary Science has created on its website. In order to stimulate participation, a model that can be described as "participative lectures" was put into operation. Thus lectures began with the reading of a text, or more commonly, with the viewing of images, and students were given a reasonable amount of time to expound their ideas and put forward what they could say with respect to this. A debate was encouraged based on the speculations formulated and a list drawn up with various points to be developed during the course of the class. In the event of no ideas emerging related to elements envisaged in the following explanation, an effective option consisted of asking specific questions which pointed towards this content.

Although the subject was designed with students recently incorporated in the Faculty of Veterinary Sciences in mind, the majority of its 21 enrolled students were in fact doing the final years of their studies. Consequently, when implementing our educational proposal, we had the advantage of being able to count on a reduced group and one made up of students already familiar with the didactic techniques applied. This helps us to understand why the first part of the class, interactive and aimed at encouraging a stimulating learning environment, often went on for longer than was originally intended. This is important, because it can explain why the formula taught was so well-received, a factor which translated not only into the direct involvement of the students, but also into the academic results attained. It is also the moment to highlight the positive assessments, manifested in an informal way, with regard to the way of showing the content of the module. Nonetheless, the fact that no surveys were carried out in this respect obliges us to remain cautious.

For this reason we should also be cautious with regard to the future, taking into account that the new groups envisaged will most likely have a very different profile, both in terms of the number of students and the type of prior education.

All of this obliges us to refrain form drawing conclusions, in the hope that new tests, under quite different conditions, will help to define criteria that allow us to present a united front in the face of the coming reform.

***3.1.4. Evaluation*:** The change in the way lectures are held had a direct repercussion on evaluation, which was carried out in the following manner: The students drew up a work plan (1hr attending) based on two images presented to them (the possibility was envisaged of it being either a text or a physical object related to any of the themes covered in class). The students then had two weeks in which to collect information regarding this, having during this process one hour of tutorial (12hrs in total: 11hr non-attending + 1hr attending). In this phase the job of the teaching staff consisted of guiding and supervising the students' work, either by means of physical or electronic tutorials. Once this time had passed, the exam was sat (1hr attending).

3.1.5. Evaluation exercise: The aim was for the students to document the Vesalian anatomical reform movement so that they might reflect, in a critical way, on one of the origins of the process which led to the crisis of the criterion of authority as a basis for scientific knowledge. To do so, in a first meeting two simultaneous images were shown: an

engraving from the work *Anothomia mundini* (1519) and the cover of the treatise *De humani corporis fabrica* (1543)[5].

At the same time, the following question was put:

What do these images suggest to you? List a maximum of 10 ideas

The most frequent replies were:

- Middle Ages / Renaissance
- distant-looking teacher reciting at a dais / close teacher explaining
- absence of discussion / active participation
- content of books is not contrasted with what is seen / yes, it is compared
- Galenic anatomy based on animals / discovery of errors
- unquestionable status of ancient texts / Galenic crisis
- authority of the Classics / Vesalian movement (Vesalio, Carlo Ruini …)
- demythicising tradition / knowledge based on observation
- immutable science / need to verify and experiment with the facts
- others: social difference between doctor and surgeon, artistic differences between both illustrations, etc.

[5] Both images are taken from: López Piñero, JM. (2002) *La medicina en la historia*. Madrid, La Esfera de los libros, p. 324 and 326.

The students had two weeks to carry out a "learning" based on their own efforts. This process demands a greater student involvement and autonomy and requires them to put into practice methodologies explained and taught in the documentation sessions (for instance, the use of I.T. resources to locate texts related to the information that was being asked of them).

With the aim of measuring the work done and evaluating the knowledge and skills acquired, the exam was held.

1. *Who are the various protagonists of these scenes?*
2. *What do you think they are doing? Why are they doing it?*
3. *What places are these scenes taking place in?*
4. *Situate the scenes in their setting (period, country)*
5. *Point out a couple of important elements that appear in each of the scenes.*
6. *What relation do you think these scenes have with human medicine?*
7. *And with animal medicine?*
8. *What kind of knowledge do you think the various protagonists of these scenes achieved?*

Finally they were asked to relate these scenes to some element of their personal experience.

The marks ranged from 5.3 to 10, with the majority of the marks in the 7-8 range (on a scale of 1 to 10).

3.2. Documentation (18 hrs of work per student)

3.2.1. Objectives: In this section of the subject students will discover the dynamics of information in veterinary science, the most important kinds of documents and the way to recover selectively a particular item of information on any type of medium. In this way students will be able to apply the basic tools of a documental nature related to the knowledge and practice of veterinary science, in accordance with the scientific method.

3.2.2. Teaching content and methodology: Two themes were developed in the form of one-hour lectures (2 assisted hours) and two practical sessions of an identical duration in the I.T. room (2 assisted hours). This module encourages students to use computers, linking the University's teaching system to innovation.

The theory sessions set out the main characteristics and problems of scientific information: large size, rapid growth and ageing, obsolescence, etc. Those bibliometric indicators most used to analyse the information generated in veterinary research are also defined. In addition, the process involved in the production of current documents, as well as their type, structure, function and location are explained. The final part is devoted to the study of the "Uniformity Requirements for Manuscripts sent to Biomedical Journals" (Vancouver Rules). The student participates in this session by drawing up bibliographical references for books and journal articles using material provided in class and following the aforementioned international rules.

The practical sessions are carried out in the I.T. room. Their aim is for students to become familiar with the new technology incorporated into the field of documentation and which play an essential role in information recovery systems (IRS). As auxiliary material, each student is given a workbook entitled *Access to veterinary documents* which consists of a series of exercises to be solved using the resources available on the internet and from other

information and communication media. To do so, the students are made familiar with those multimedia resources available in their natural environment and indispensable in the modern world of higher education: the UAB Libraries' computerised catalogue, the collective catalogue of the universities of Catalonia (CCUC), the Digital Library of Catalonia, and the most relevant databases in the field of veterinary sciences: CAB Direct, FSTA Direct, BIOSIS, ISI Web of Knowledge, ICYT, among others.

Using all this, students have to complete the exercises in the workbook: locate a book, count the number of copies in the Faculty of Veterinary Science and in the UAB, make a note of its status (copies available, lent out or excluded from lending), copies in other Catalan universities, etc. Another activity has to do with articles in journals, and includes specific questions related to the nature of the periodic publications. The student is also made aware of the main databases and instructed in how to use those precise instruments that allow information recovery: search profile, standardised nomenclature, describers. Finally, the students (in groups of up to 4) have to draw up a *Bibliographical research report*, which consists of carrying out a real bibliographical search on a specific subject that they themselves have chosen. To help them to do this, they are given a guide that sets out a series of specific points to be developed in this research work: presentation and justification of the chosen subject, the databases consulted, search procedures followed, bibliographical references found, etc.

This activity incorporates into their training experiences that encourage cooperative work and promote the students' freedom and responsibility in the selection and discrimination of information and in the drawing up of a programme that suits their requirements. It also aims to stimulate the student's critical and selective capacity faced with the avalanche of information to be found in computer networks. Finally, the *Report* has to include a biometric analysis of the references obtained: countries of origin of the researchers, types of articles published and of research carried out, specific aspects most studied in recent years, evaluation of the number of works found, institutions and main authors involved, among others. In the light of these conclusions, they have to decide how a future study about the chosen subject should be focused: points to be developed, work plan, changes in the search profile, institutions or authors to be contacted, etc.

The time the student devotes to this activity comes to twelve non-attended hours for drawing up the *Report* and to two attended hours of seminar where the students expound and discuss their work.

In short, an eminently practical module that stresses the impact of new technologies on educational methods and that involves a radical change compared to the traditional model; a change that is nonetheless inevitable and which is affecting the whole of society.

3.3. Practicum (54 hours' work per student)

The "*Practicum* of introduction to the world of veterinary science" is in keeping with the paradigm of learning from action, i.e. from the practice that professionals of the veterinary world undertake on a daily basis[6].

[6] Practicum: paradigma del conocimiento en la acción, by Schon. Its theoretical framework is reflective practice, which is defined as "the set of processes by means of which a professional learns from his or her own experience". (*Cf.* Icart Isern, M. T. et al. Prácticas de Enfermería Comunitaria: evaluación de una muestra de enfermeras tutoras (curso 2001-02). *Educación Médica Internacional,* 6, No. 4, 143-148; here pp. 147-8).

From an educational perspective, the carrying out of the *Practicum* is meant to be an opportunity for the student beginning the degree in veterinary science to undertake an early immersion in different fields, both of an academic and professional nature. The student, by means of this activity, enters by the same door as the users, the animals and their owners.

Its execution involves carrying out two programmed visits to the same service, either an academic-administrative or a clinical one, which in accordance with the aims envisaged in the *Practicum* may belong to one of the following fields: 1) "Get to know your faculty" (dean's office, secretary's office, library, students' associations, departments, etc.), and 2) "Get to know veterinary practice" (urban veterinary clinics and/or veterinary clinics in rural areas).

The choice was made at the beginning of the year in a monographic session devoted to presenting the *Practicum* (1hr attended) and in which a guide was distributed setting out the principles, objectives, activities and other aspects related to the module. The *Practicum* could only be carried out individually, however up to six students were able to choose the same topic, for instance: office of the dean of the faculty, library, Barcelona zoo, among others.

Once the option had been chosen, each student had to carry out the following activities:

- A first visit on the same day to the place selected (6 hrs attended). Each visit is carried out individually, in accordance with the distribution set out by the teaching team. This activity requires the use of suitable clothing and for students to travel to the corresponding place.
- Writing up of a report, following the guidelines set out in the *Practicum* guide (18 non-attended hours), using the information gathered during the visit.
- Personalised tutorial (1 hr attended).
- Presentation and defending of the report in a public tutorial session (2 attended hours). In this phase, the students share their experiences by reading out their reports. By means of a brainstorming session, students and teaching staff members identify problem situations and suggest questions and/or activities.
- A second visit of identical duration (6 attended hours)
- Writing up of a second report following the guidelines set out in the *Practicum* guide and drawing on the conclusions from the tutorial session (18 non-attended hours).
- Personalised tutorial (1 hr attended)
- Presentation and defending of the second report in a public tutorial session (1 attended hour).

3.3.1. Evaluation: Each work was marked and evaluated independently before being presented. Two of the subject's lecturers participated regularly and actively in the presentation and defence sessions of the various reports. At the end of the Practicum, a final mark was applied, drawing together the partial marks and the assessment of the presentation and defence of the reports.

4. EVALUATION OF THE SUBJECT

A meeting of all the lecturers involved in teaching the subject enabled an individual assessment to be made of each student, discussing the different marks they had obtained in the various tests. Also taken into account was their attitude (participation, interest, etc.) throughout the theoretical and practical activities carried out, especially with regard to the presentation and defence of the various reports.

To sum up, our aim in this paper has been to reveal our teaching experience, at the same time as exchanging opinions with current and future professionals in the discipline; a proposal which, in accordance with current demands, involves a new approach to the way we teach and which considers the presence of the discipline in the new syllabuses as being crucial.