

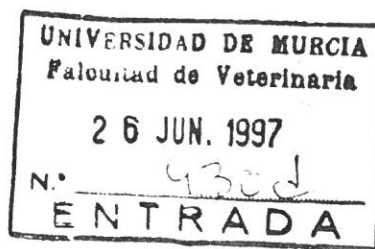


EUROPEAN ASSOCIATION OF
ESTABLISHMENTS FOR VETERINARY EDUCATION
(E.A.E.V.E.)

ASSOCIATION EUROPEENNE DES
ETABLISSEMENTS D'ENSEIGNEMENT VETERINAIRE
(A.E.E.E.V.)

EUROPEAN SYSTEM OF EVALUATION OF VETERINARY TRAINING o SYSTEME EUROPEEN D'EVALUATION DE LA FORMATION VETERINAIRE

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5 June 1997

Dear Francisco,

Please find enclosed a copy of the Site Visit Report for the Murcia Veterinary Faculty, which has now been approved by the Advisory Committee on Veterinary Training (ACVT) and the EAEVE Education Committee.

You should have received a loose-leaf copy after the EAEVE Annual General Meeting at Budapest, and in due course you and the Rector of the University will receive 'official' copies from the European Commission. We will naturally send you the French version of the report once the translation has been finalised.

It was a pleasure to work with you on this evaluation, and would like to thank you once again for a most pleasant visit.

Yours sincerely,

with our best wishes,

Max Allman

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**EUROPEAN ASSOCIATION OF ESTABLISHMENTS FOR
VETERINARY EDUCATION (EAEVE)**

**Issue 2
8 May 1997**

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**REPORT ON THE VISIT TO THE
VETERINARY FACULTY OF
MURCIA**

22 - 28 APRIL 1996

Report from the EAEVE
adopted by the ACVT
on 18 March 1997 (doc XV/E/9389/1/96)

Curriculum and Course Structure

(9.3) The amount of theoretical teaching should be decreased and the number of practical sessions, particularly clinical training, be increased. There should be a greater emphasis on self-learning.

(2.3) The coordination and integration of teaching in the Faculty should be improved to **ensure that all aspects of veterinary subjects are well covered without duplication. Some of the Departments should be reorganised to promote such integration, for example by grouping basic sciences within at most two Departments, and joining food technology with food hygiene.**

(9.3) Students should be given a graduated exposure to practical work with animals through the entire five year course. This should start with structured early courses on animal handling, care and husbandry to enable first cycle students to act as clinical assistants and take part in summer practice. This practical courses should continue with basic clinical techniques to prepare students for intensive work in different clinical areas. Some of this could be effectively provided by a structured extra-mural programme.

(5.1.1) The biology course should be better coordinated with the teaching that students have received prior to enrolling at the veterinary faculty.

(5.1.1) The teaching of applied physics should be revised to reflect new technology.

(5.1.1) Biostatistics should be included in the future programme of 2nd cycle teaching (4th/5th year).

(5.1.2) The volume of histology teaching should be reduced to allow self-teaching by the students from material that is available within the unit.

(5.1.2) The teaching in pharmacy, in particular the practical work, should be increased, and coordinated with related topics in clinical sciences, animal production and food hygiene.

(5.2.3) Essential topics in animal production and nutrition should be coordinated and integrated with the teaching of clinical subjects. Coordination with food hygiene teaching is necessary for well-integrated training, "from stable to table".

(5.2.3) Herd health surveillance and control by computerised systems should be taught for all species in a well-equipped computer room.

(5.3) The diagnostic skills of students would be enhanced by more autopsy work on production animals. Consideration should be given to enhancing the training of the student through 'cadaver surgery' on autopsy or euthenised animal material. The post-mortem caseload of production animals should be increased by collecting carcasses from the surrounding farms. Small animal material could readily be collected from local practitioners.

(5.3) The clinical service and mobile clinic staff should be more oriented to the important livestock in the area, i.e. food animals.

(5.3) The operation of the mobile clinic should be expanded to increase the number of visits and the animal material seen by the students.

(5.3) The clinical teaching needs to be widened to encompass avian species and small mammals, i.e. poultry and rabbits, which are economically important species in the area. As

they are in effect food animals, clinical teaching should incorporate a strong element of disease control and food hygiene.

(5.4) There must be better integration of teaching of food-related issues.

One option which merits early consideration would be the joining of food technology with food hygiene.

This would immediately bring together related interests to provide a strong basis for developing the teaching and research in food hygiene.

(5.4) Urgent consideration must be given to exposing the undergraduates to the practical slaughter and dressing of all species. This should include poultry processing, as well as a course of teaching in poultry breeding for both meat and eggs.

(5.4) The requirements of food hygiene teaching must be included in the development of the Faculty Farm. For this subject to be taught successfully areas such as ethology and animal production, epidemiology and preventive medicine are of great importance.

(5.4) Certain subject areas provide the base on which to build the teaching of food hygiene. The order in which subjects are taught should be carefully considered in the development of the new curriculum, with proper account taken of the needs of the subject of food hygiene.

(4.6) The new clinics and hospital should aim to involve the students far more actively in the day-to-day care and running than they are at present. For instance, sleeping in on-site to provide post-operative care and 24-hour service all year round. It is necessary to provide more basic practical clinical training at an earlier stage in the curriculum for students to be able to take on an integral role in the new facilities.

(5.3) The organisation of summer practice, which is viewed extremely positively by students, should be improved and made compulsory for 4th year students.

(9.6) There is a need for a better structure to the extra-mural study, with a view to making such placements an integral part of the training. Aims and objectives for such placements should be established, and an assessment of the value of a particular placement to the overall training of the student carried out. This will be heavy on staff time to supervise properly, but should nonetheless be further developed.

(9.6) The Faculty should extend the catchment area of the extramural training system so as to provide placements in the home area of students from outside the region of Murcia.

(9.9) As the curriculum is being updated, it would be an appropriate time to review the examination system. A system of external examiners should be introduced, although it is reported that this raises legal problems. External examiners would provide an objective measure of the examination system and the performance of students and would also facilitate cooperation and coordination between the Faculty and other veterinary schools.

(9.9) The Faculty should also establish an Examination Board to provide an independent and objective assessment of the pass mark.

XV/E/9389/1/96

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INTRODUCTION

The Veterinary Faculty of Murcia was visited by the team of experts from 22 - 28 April 1996.

About a month prior to the visit the members of the team had received a well-prepared and comprehensive Self-Evaluation Report (SER), complete with a questionnaire and the annexes. This material had been prepared by the Faculty in accordance with III/D/5056/5/89. Additional material was provided during the visit.

In the course of discussions during the visit, the team was informed that teaching staff and students had been involved in the preparation of the SER, but that the administrative and support staff had not been closely involved.

Prior to the visit, each expert was assigned specific chapters of the SER related to his/her particular area of expertise to study and evaluate in greater detail.

During the visit the team met with the Dean of the Faculty and his team, representatives of teaching staff, students, administrative and support staff, professional veterinary associations and veterinarians in practice, industry and public administration. The team was honoured to meet Mrs Guttierrez, the Regional Minister for Culture and Education of the Regional Government of Murcia, Mr. Martinez Selva, the Director-General for University education from the Regional Government Council for Culture and Education, Mr. Zamora, the Chairman of the Social Council, and Mr. Fuertes, the owner of the El Pozo processing plant.

The Faculty of Veterinary Medicine is part of the University of Murcia. The present University was founded in 1915, although the earliest origin of a university in Murcia date back to 1272. There are three University campuses, the largest being Espinardo on the outskirts of the town. The Veterinary Faculty was established at the Espinardo in 1982. The faculties of medicine, biology, computing, chemistry and mathematics are also located on the Espinardo campus. Access to the Veterinary Faculty is easy both by road and public transport. The proximity to Murcia facilitates access to companion animal clinical material, and the Faculty is situated in the most intensive pig production area in Spain.

It is important to note that the overall responsibility and control for the University of Murcia have recently been transferred from central government to the Regional Government of Murcia. This change gives grounds for optimism for the future of the Faculty, in that regional management means shorter lines of communication between the competent authorities and the academics, and the possibility of a more flexible management structure.

The visit had been very well prepared, and thanks for this are especially due to the Dean, Dr. Francisco Moreno Medina and to Ms. Angeles Martinez Cegarra. Thanks are also due to the team of staff at the Faculty who were responsible for preparing the SER, and to Dr. Orozco Gonzales for his considerable contribution as Liaison Officer. The team greatly appreciates the interest and cooperation shown by the staff and students at the Faculty throughout the visit. The team also greatly appreciates the valuable contribution made by the two interpreters, Miss Angeles Martinez Cegarra and Mr. Blas Sajardo Martinez, provided by the Faculty. The team are grateful for the positive attitude shown towards the evaluation by the Regional Government and the University of Murcia.

1. OBJECTIVES

1.1 Findings

The objectives of the Faculty can be considered at three levels; general objectives, specific objectives, and operative objectives.

1.1.1 General Objectives

The general objectives of the Faculty are those determined by the definition of the basic role and function of the University, namely:

- The training of veterinary professionals and researchers.
- Veterinary clinical services to society.
- Livestock advice: animal handling, reproduction and production.
- Advice in the field of food hygiene and technology.
- Applied research in the above areas.

1.1.2 Specific Objectives

- To develop the capacity of the profession to act with scientific methods, to use suitable instruments, and to deal with problems through the analysis and assessment of the different solutions and their economic impact.
- To provide a basic adequate training that enables graduates to specialise in different fields of veterinary activity and adapt themselves to continuous scientific and technological progress.
- To provide the knowledge and capacity to handle the most relevant information sources, from a critical point of view.
- To encourage a participating attitude and capacity in interdisciplinary projects.
- To inform and take into account the implications of the veterinary profession on its field of activity, on the environment and on the economy
- To encourage respect of animal welfare and towards the professional responsibility as regulated by the Deontological Code.

1.1.3 Operative Objectives

The operative objectives are defined by Article 1 of EEC Directive 78/1027 and in the Royal Decree of 1384/1991. Veterinary graduates should know:

- The development, structure and function of the animal organism.
- The mechanisms and methods of animal reproduction.
- The genetics bases and its application aspects, particularly those related to animal improvement.
- The exploitation systems and the conditions of housing and handling of animals.
- The scientific basis of animal nutrition and their application to different animal species.

- The characteristics of the animal species, their relation with animal production and safeguarding of the animals welfare.
- The agricultural and livestock medium, the impact of agricultural and livestock activities on the environment and economy, and possible solutions.
- The agents which are likely to cause morbid conditions in animals, their pathogenic mechanisms and the morphologic and functional alterations which they provoke, not only at an individual level, but also at a collective one.
- The diagnosis techniques, the prognostic value and the therapeutic and surgical measures, as well as the way in which pharmacological principles work, their indications and contraindications.
- The epidemiological and ecopathological aspects of animal diseases. Methods of prevention, control, eradication; special attention to zoonosis.
- The technology in production, transformation, preservation and distribution of food for human consumption; hygiene, inspection and control of this sort of food and of the food industry.
- The deontological aspects and of the legal, ruling and administrative provisions of veterinary activities.

1.2 Achievement of the objectives

The University has recently started a teaching assessment, the main instrument of which is a questionnaire on the courses and teaching that is completed by students. The results are conveyed to the individual, the Departments, the Faculty and the student delegates.

There is at present no sanction for poor teaching, or for lecturers who will not respond to criticism, but these may come in the future.

1.3 Measures taken to achieve the objectives more fully and to evaluate the level of achievement.

Further reductions in the student intake are proposed, to improve the staff-student ratio.

An increase in the Faculty budget is being sought

The Faculty is acquiring new facilities; a hospital building with animal clinics, a Faculty Farm, and a Pilot Plant for food technology.

The recent system of teaching assessment should lead to improvements in teaching method.

1.4 Comments

Although the assessment of teaching is a relatively recent development, and therefore still somewhat experimental, it would appear to be a useful tool rather than a paper exercise.

There would appear to be room for improvement in the relationships with the local practitioners, which would be beneficial to both parties.

1.5 Suggestions

A practitioners-Faculty liaison committee should be established. As well as improving contact between groups with many common interests, such a structure could provide valuable feedback on the quality of, or deficiencies in, the teaching of recent graduates and extramural students i.e. an independent view on how well the teaching is meeting its primary objective.

External examiners should be introduced (see section 9.9).

2. ORGANISATION

2.1 Findings

There are a number of bodies overseeing the decisions and governing the Faculty and University.

The Social Council of the University is made up of twenty persons and a chairman. Its main roles are to oversee supervise budget and staffing, and handle the relations of the University with central government and industry.

The University Council is the most important representative body of the University and is made up of 340 to 360 members. Its main roles are to supervise the government and management of the University and deal with formal proceedings such as statutes and the election or dismissal of the Rector.

The Governing Body is comprised of around 72 members, primarily the Deans and Directors of the University Faculties, Schools and Institutes, along with representatives of the teaching staff, support and administrative staff, and students. Its main role is in the day-to-day running of University.

The Faculty Board is the highest representative body of the Faculty, and is composed of around 120 members representing the academic staff, grant holders, administrative and service staff and undergraduate and graduate students.

Within the Faculty, there are committees of Research and Library, University Extension, Academic Affairs, Financial Affairs and New Curriculum.

There are eight Departments in the Faculty. The Department of Comparative and Pathological Anatomy and Food Technology, the Department of Animal Pathology and the Department of Animal Production are within the Faculty. The Departments of Animal Biology, of Socio-Sanitary Sciences, of Physics, of Applied Mathematics and Statistics, and of Biochemistry and Molecular Biology are outside the Faculty.

As a result of the organisational structure there is very little managerial authority at Faculty level. The University directly controls the allocation of resources - both financial and personnel - to the Departments. The latter have only limited authority, however, over the work of the individual teaching units, which can function largely independently of each other if they so wish.

2.2 Comments

The relationship and balance of power between University, Faculty, Department and Teaching Unit is similar to that found in other veterinary faculties in Spain. There appears to be very little scope for change, but the team wishes to record its opinion that the structure gives rise to a number of important weaknesses within the Faculty.

In discussions with the Departments and the administration, the team received different opinions regarding the possibility of employing additional staff, especially support staff, from such Departmental funds as clinical income or research grants. Several Departments informed the team that it is extremely difficult to take on such staff, even if they have the funds to do so, as it is the University that must make the contractual arrangements.

However, the University administration have stated that should a Department wish to take on temporary staff from its own resources, there is no problem in doing so.

Despite the departmental structure, each unit seems to be autonomous and independent. In parts of the course, important detail is being missed due to a lack of coordination both **within and between topics**. There is also some evidence of **duplication in teaching and an inappropriate emphasis or orientation** in some subjects.

Relationships between some of the teaching units would appear to be poor. The team has been told by students that in some instances this has a detrimental effect on the teaching, particularly with regard to 'internal students' from different Departments. There is excessive scope for domination by strong personalities within the Faculty.

There is no organisation that deals with the welfare of veterinary students.

2.3 Suggestions

The size of the Faculty Board makes it an unwieldy body for constructive and focused discussion, and mitigates against effective decision-taking. It should be scaled down, and more executive power given to a 'Deans Team' of less than one tenth the size of the present Faculty Board.

The University should review, and modify as necessary, the mechanisms governing the allocation of resources.

The coordination and integration of teaching in the Faculty should be improved to ensure that all aspects of veterinary subjects are well covered without duplication. In the opinion of the team, some of the Departments should be reorganised to promote such integration, for example by grouping basic sciences within at most two Departments, and joining food technology with food hygiene.

As mentioned elsewhere in the report (section 7.3), the University needs to improve the potential for the employment of additional staff by Departments using their own resources.

A student body should be established to raise issues relating to the welfare of students at the Faculty. This should be in addition to the existing 3 student organisations.

3. FINANCES

3.1 Findings

The income and expenditure of the Veterinary Faculty of Murcia are summarised in tables 3.1 and 3.2, expressed in Pst and ECU (154 Pst = 1 ECU), and relate to the 1995 calendar year.

Table 3.1: Murcia Veterinary Faculty income for 1995

	Pst	ECU
a. Income from the State and public authorities	52,950,701	3,438,323
- for basic training + investment	48,635,777	315,817
- for further training	5,112,243	33,196
- for research	53,900,048	350,000
- for other activities (Salaries)	421,853,633	2,739,309
(Maintenance Expenditure)	16,605,556	107,828
(Buildings)	2,600,000	16,883
b. Income from private bodies		
c. Income generated by the establishment		
- registration fees from students on basic courses		
- registration fees from postgraduate students		
- income from continuing veterinary education		
- income from clinical activities	3,600,000	23,377
- income from diagnostic activities		
- other income (deposits)		
d. Income from other sources (economic activities)	1,215,852	7,895
e. Total income from all sources	579,014,109	3,759,832

Table 3.2: Expenditure administered by the Faculty

	Pst	ECU
a. Personnel	421,853,633	2,739,309
a1 teaching	323,545,156	2,100,942
a2 non-teaching	64,183,467	416,776
a3 research	34,125,000	221,591
b. Running costs		
b1 utilities	17,821,408	115,723
b2 teaching expenditure	33,841,346	219,749
b3 research expenditure	30,995,216	201,268
b4 general running costs	25,491,000	165,526
c. Equipment		
c1 teaching	19,906,674	129,264
c2 research	22,904,832	148,733
c3 general equipment	3,620,000	23,506

d. Maintenance of buildings	2,729,073	17,721
e. Total operating expenditure in budget		
f. New buildings (construction investment)		
g. Total expenditure administered by University	553,572,182	3,594,624

	Pst	ECU
Annual direct cost of training a student	520,457	3,379
Direct cost of training a graduate	3,424,607	22,238

Some Departments would appear to be financially marginalised by the current system of distributing funds among the teaching units.

The procedures whereby funds are allocated to the clinics for the purchase of new or replacement equipment appear to be failing. It has apparently been necessary for clinicians to carry out extra activities in their own time in order to raise funds for several items of essential equipment.

Some Departments are having to support their practical training sessions using money from research funds or other activities, as the University regards the unit cost of veterinary training as the same as other disciplines.

The University levies a 10% charge on all incoming research grants, to which has to be added 16% VAT.

3.2 Comments

The unit cost of veterinary training at Murcia is comparable to that of the Medical Faculty, but is nevertheless too low in comparison with other veterinary schools in Europe. The team understands that the number of registered students is an important element of the calculations whereby faculties at Murcia are financed by the University. This inevitably places the veterinary Faculty at a disadvantage.

It is not realistic for the University to consider and fund veterinary training on the same basis as other Faculties. The unit cost of veterinary training is universally far higher than all other disciplines, aside from human medicine, with which it is equivalent. A lot of intensive practical training in small groups is required for veterinary undergraduates, and the equipment, consumables, and animal material are additional costs. Support staff to prepare teaching material and laboratory ware are also required, along with transport for external visits.

In discussions with staff, it was found that a lack of funds meant that clinical and practical teaching had to be funded from other areas, such as research money or income generated by extra-curricular work by staff.

The reported failure of the current mechanisms to adequately fund the purchase or renewal of equipment that is essential for providing clinical services and training is a matter of concern.

The team was pleased to be informed, however, that the funds for the new hospital and clinics included the costs of the equipment and materials that one would expect to find in such facilities.

3.3 Suggestions

The team suggests that the unit funding be increased to be compatible with the average levels in the EU countries.

There should be no reduction in the overall funding imposed as a result of any further reduction in the student intake; a good ratio is a key element in ensuring quality in the veterinary training.

The future capital developments at the Faculty, i.e. the farm, hospital and new clinics, should receive the funding for equipment, materials and staff, especially support staff, necessary for them to be operated effectively.

The process by which funds are allocated needs to be revised to ensure that smaller departments are not marginalised by the larger units.

Ways should be found for pump-priming research activities in different departments, to overcome the problems of obtaining grants for Departments with no research track-record.

4. PHYSICAL FACILITIES AND EQUIPMENT

A. EXISTING FACILITIES

4.1 Findings

The Faculty buildings are all relatively new and in a good state of repair.

The clinical premises were small and crowded, with no housing for large animals and no animal hospital.

Many of the Departments do not have sufficient equipment to carry out research work. Those departments who have been successful in obtaining grants have generally significantly improved their capabilities in this respect.

There was no venting or extraction of the halothane used in large animal anaesthesia. The team was informed that this area is no longer in use. Washing facilities in the clinical area were inadequate.

The lecture theatres were in general well-appointed, but lack dual projection facilities.

4.2 Comments

The team was impressed by the quality and space in the Faculty and the Departments, with the exception of the clinical premises. It found that in general the buildings were well-appointed, suited to their purpose, and comfortable to work in.

The clinic buildings are unsatisfactory, and with the establishment of a facility for large animal work, lack space. The lack of housing for large animals and animal hospital compromises the ability to teach clinical subjects and to provide students with experience of animal handling and care. The team strongly supports the planned new hospital and clinical facilities (Chapter 5).

The team was impressed by the equipment that the staff of the clinics had purchased through extra activities carried out in their own time. However, it is regrettable that it is necessary to remedy deficiencies in this way. A veterinary school cannot realistically teach without clinical activity, and must have adequate equipment for such activity.

The poor venting of anaesthetic gases is hazardous for the clinicians, support staff and students.

It is impossible to rectify all the shortcomings of the clinics within the existing buildings. It is therefore important that the new clinics and hospital are completed as soon as possible.

4.3 Suggestions

The planned new facilities are urgently needed, and suggestions relating to these have been made separately in section 4.6.

The Faculty together with the clinical staff should conduct a review of the equipment needs of the clinics, firstly to agree the equipment to be installed in the new facilities and secondly to remedy in the short term some of the current shortcomings in the clinical facilities so that they can function and teach properly.

4. B. PLANNED NEW FACILITIES

The Faculty is currently receiving some major capital investment for specific facilities, notably a new animal clinics and hospital (which will also house several of the teaching units), a Faculty Farm, and a Pilot Plant for food production.

4.4 Findings

Funding for the Faculty Farm and the new clinics, including the hospital is tripartite. The largest portion (over 60%) comes from the European Union FEDER funds (Regional Improvement Fund). The balance comes from Regional Government and Central Government. The Pilot Plant has been supported by a grant from the EU STRIDE programme.

The agreed programme is to commence work on the hospital and farm in 1997. However, the team has been informed that the University has proposed advancing the start of the work to 1996, and that this proposal has been accepted by the Regional Government and the national Government.

4.5 Comments

The Spanish authorities are to be congratulated on obtaining such substantial support for the Faculty Farm and new hospital and clinical facilities from FEDER. The team supports the proposal made by the University for advancing this development programme with a view to starting the work in 1996.

The team is concerned that there does not appear to be an overall plan within the Faculty as to how and to what purpose these important new facilities are managed, and by whom. These facilities are potentially extremely valuable, and there needs to be a clear management structure to maximise this.

The team was disappointed to see that the pilot plant for food technology, as one of the relatively few areas that has research funding, did not appear to be close to an operational state.

The team was pleased to hear that the capital funds for the new hospital includes resources for equipment and materials. A well-equipped clinic should bring in the clinical material necessary to upgrade practical teaching in clinical subjects. As previously stated (4.3) the clinical staff and the Faculty should assess the material provisions needed for the new facilities so as to be in a position to purchase and install the necessary equipment as the buildings are completed.

4.6 Suggestions

The team suggests that work on the Faculty Farm and hospital/clinics should be finished as soon as possible; these facilities are urgently needed for undergraduate training.

The Farm should become a central part of undergraduate teaching at the Faculty. To this end:

- there should be a clear management structure for the Farm, which should be under the charge of a suitably qualified farm manager (e.g. a farmer or agronomist).
- the Farm should offer diverse activities. It should not be dominated by a single discipline or a single species, nor should it duplicate teaching that is already available elsewhere, for instance through the existing links with the pig operation and

processing facility at El Pozo. The range of material at the Farm should be national and international, and not purely regional.

- the Farm should be provided with sufficient staff to fulfil its teaching role properly.
- 1st cycle students should be involved in the day-to-day tasks of running the farm, for instance feeding, grooming, "mucking out".
- **the teaching at the Farm should be integrated, covering all aspects of animal and herd health, from reproduction, through nutrition, to food hygiene.**

The pilot plant should become operational as soon as possible to enable students to make full use of these potentially excellent facilities as soon as possible. This will also enable research in this area to proceed.

To justify the investment and to improve the clinical teaching the new hospital and clinics need to be provided with adequate personnel, including support staff. Some of the deficiencies evident in the present clinic should not be repeated, especially those of health and safety.

Provision should be made within the new facilities for the extension of clinical services and student participation in clinical activities (see section 5.3 and 9.3).

5. ACTIVITIES AND FACILITIES AVAILABLE

5.1 Basic Subjects and Basic Sciences

5.1.1 Basic Subjects

Findings

The curriculum hours in the basic subjects taught to veterinary students are shown in Table 5.1.

Table 5.1: Number of teaching hours in basic subjects

Subject	Lectures	Practical work	Tutorials	Total	Ratio of lectures to practical work
Biophysics	90	60		150	1:0.67
Chemistry	90	60		150	1:0.67
Biology and Zoology	72	36	3	111	1:0.54
Botany	48	24	1	73	1:0.52
Statistics and Biostatistics	120	60	77	257	1:1.14
Total	420	240	81	741	1:0.76

Only the chemistry unit is located in the veterinary faculty. The teaching unit for biology (which includes botany) is located in the Faculty of Biology. The laboratories of the teaching unit for physics are dispersed among the Faculties of Biology, Chemistry, Computing and Veterinary Studies.

Mathematics is taught only in the first year of study. Practical groups comprise 40 to 50 students for elementary exercises and 10 for supervised work.

The chemistry curriculum covers basic topics to bring the knowledge of the students to a uniform level.

Comments

The supervised work in biology are seminars prepared by the students from scientific journals. The laboratory equipment and the practical exercises in biology are satisfactory.

The physics unit has a significant research activity of a commendable level.

The teaching in the basic sciences comprises a large number of lectures and practical hours, and leaves little time for the student for reflection on the course content. The teaching puts the emphasis above all on the acquisition of facts.

Suggestions

The team suggests that the biology course should be better coordinated with the teaching that students have received prior to enrolling at the veterinary faculty.

The request by the staff of the mathematics unit to be located in the veterinary faculty should be granted.

Biostatistics should be included in the future programme of 2nd cycle teaching (4th/5th year).

The teaching of applied physics should be revised to reflect new technology.

The apparatus for practical work in chemistry should be brought up to date.

5.1.2 Basic Sciences

Findings

The curriculum hours in the basic subjects taught to veterinary students are shown in Table 5.2.

Table 5.2: Number of teaching hours in basic sciences

Subject	Lectures	Practical work	Supervised work	Total	Ratio of lectures to practical work
Anatomy (including histology and embryology)	270	210	30	510	1:0.88
Physiology	120	60	4	184	1:0.53
Biochemistry	120	60		180	1:0.50
Genetics	60	30	7	97	1:0.61
Pharmacology	55	29		84	1:0.53
Pharmacy	10	2		12	1:0.20
Toxicology	54	18	6	78	1:0.44
Microbiology	80	40		120	1:0.50
Immunology	40	20		60	1:0.50
Epidemiology	13	4		17	1:0.31
Professional ethics	18	6	2	26	1:0.44
Total	840	489	49	1378	1:0.64

Comments

The amount of supervised work is low.

Practical teaching is of good quality, and the laboratory equipment for practicals is adequate. Each unit has its own teaching laboratory. There is an extensive collection of good slides for anatomy, which complements the dissection work. The dissection room for anatomy is small. It is necessary to have a separate room for the ossuary. Histology has a large number of hours of practicals. The number of lectures and practicals in pharmacy is low.

The number of hours in epidemiology should be increased in the future programme.

The teaching of basic sciences is adequate overall. In order to improve it, it is necessary to equip the laboratories with technical personnel in order to ensure that practical classes are well-prepared. There are only three laboratory assistants for all the basic sciences, 1 in anatomy, 1 in pathological anatomy, and 1 in biochemistry.

The units of teaching are grouped in department. Basic sciences and subjects are dispersed among six different departments;

- Anatomy, Pathological Anatomy and Food Technology
- Animal Biology
- Biochemistry and Molecular Biology
- Physics
- Applied Mathematics and Statistics
- Socio-Sanitary

It would be preferable for basic sciences to be grouped within two departments in order to improve the coordination of teaching, to avoid repetition (between biology and

cytology, for example) and to orient the basic sciences towards the needs of veterinary training

Each unit in its own department seems to be very autonomous and independent. The coordination of the teaching programme within each Department should be improved.

Suggestions

An exhibition hall for anatomy should be established to enable the permanent display of skeletons for the students and a larger 'bone room'.

The volume of histology teaching should be reduced to allow self-teaching by the students from material that is available within the unit.

The teaching in pharmacy, in particular the practical work, should be increased, and coordinated with related topics in clinical sciences, animal production and food hygiene.

Each unit should have a suitably trained technician to prepare practical classes and to develop diagnostic services and support research.

The basic science departments should be grouped together to improve coordination in teaching.

5.2 Animal Production

5.2.1 Findings

Animal production is taught in 6 courses by 4 teaching units: Agriculture and Agrarian Economy, Ethnology and Animal Production, Genetics and Animal Husbandry, Animal Nutrition and Feeding.

The topics taught in animal production subjects are shown in table 5.3.

Table 5.3: Compulsory animal production subjects

	Lectures	Practical work	Supervised work	Other	Total	Ratio of lectures to practical work
Animal Production	84	42			126	1:0.50
Animal Nutrition	90	60		6	156	1:0.74
Agronomy	60	60		6	126	1:1.10
Rural Economics	60		60	6	126	1:1.10
Animal Husbandry	60	30	7		97	1:0.62
Vet. Hygiene	36	18			54	1:0.50
Animal Ethology and Protection	25	10			35	1:0.40
Total	415	220	67	18	720	1:0.74

The departments teaching animal production subjects consist in total of 3 professors, 9 University lecturers, 2 assistant lecturers and 2 laboratory assistants.

5.2.2 Comments

According to the Spanish veterinary training tradition, the teaching load in animal production subjects is heavy compared with that normally found in European Veterinary Schools. The teaching provides the students with an updated, advanced theoretical knowledge of animal production, nutrition and husbandry management methods of the various species of domestic animals, although teaching in cattle and poultry is weak, and

that in pigs is very strong. In addition, teaching of genetics, breeding and management from stable to table is taught very well for pigs.

Due to the climate and location of Murcia, there is special teaching in the particular regional aspects of agriculture, cultivation, alternative foodstuffs and forage preservation.

It would appear that the various teaching units that provide training in animal production, **clinical and food hygiene subjects collaborate with different farms and enterprises in the area**, rather than having integrated training on a single herd or farm. The team was also told that it is not unusual for different veterinarians to be dealing with different aspects affecting the health of a herd, for example one practitioner dealing with breeding, one with nutrition and one with disease control.

There is an urgent need of a functioning farm for practical teaching. As already stated, the building of this facility should start in 1996.

The new farm will be a valuable resource, the main objective of which must be to enable the Murcia Faculty to provide integrated undergraduate teaching in a range of subjects. However, the nature of this farm, and the research projects that it should attract, ought to make it largely self-supporting.

The integration of the Animal Production Department teaching units is commendable, but involves a risk of lack of coordination in teaching and research with the clinical subjects. Considering the significance of feeding and management systems for live stock health it is very important that teaching of animal production subjects is closely coordinated with such clinical subjects as epidemiology, preventive medicine and reproduction. Herd health surveillance and control programmes have to be taught for the different animal species, like cattle, swine, poultry, goats and sheep; for instance for rabbits.

Some Departments, in particular ethnology, had extremely good slide collections that they had prepared for their teaching work.

Lack of coordination and integration between the Teaching Units in the FVM in teaching and research was observed.

5.2.3 Suggestions

The team suggests that essential topics in animal production and nutrition should be coordinated and integrated with the teaching of clinical subjects. Coordination with food hygiene teaching is necessary for well-integrated training, "from stable to table".

The farm, whose primary role is for undergraduate teaching, should aim to cover diverse subject areas for a range of species. It should be managed by a general manager and directed by a small board composed of representatives from different Departments, such as the Departments of Animal Production and Animal Pathology.

Herd health surveillance and control by computerised systems should be taught for all species in a well-equipped computer room.

5.3 Clinical Sciences

Findings

Clinical Teaching

Clinical teaching is carried out by the Department of Animal Pathology with the following staff;

Table 5.4: Staff resources for clinical teaching

Teaching unit	Full Prof.	Uni. Lect.	Assist. Lect.	Assoc. Lect.	Grant Holder	Admin. staff	Lab. staff
Infectious Diseases, Epidemiology, Preventive Med. and Sanitary Policy	1	2					½
Parasitology & Parasitic Diseases		1	2				1
Medical and General Pathology	1	5	1			2	2
Surgery and Radiology	1	1	1	2 part time			1
Reproduction and Obstetrics	1	2			5	1	½

The courses in clinical subjects taught by each department and the teaching hours are presented in table 5.5.

Table 5.5: Clinical subjects taught

	Lectures	Practical work	Tutorials	Clinical work	Other	Total	ratio
Parasitology & parasitic diseases	120	60	3			183	1:0.52
Obstetrics	10	3		2		15	1:0.50
Pathology	180	120	15	15	7	337	1:0.87
Clinical medicine and surgery (inc. anaesthetics)	105	23	21	40		189	1:0.80
Clinical lectures on domestic animals, poultry and other species	290	184	15	47.5	80	616.5	1:1.12
Preventive medicine	15					15	1:0.00
Radiology	15	5		10		30	1:1.00
Reproduction and reproductive disorders	85	23		27		135	1:0.59
Vet. state medicine and public health	12	2	4		1	19	1:0.58
Vet. legislation and forensic medicine	18	6	2			26	1:0.44
Therapeutics	55	29				84	1:0.53
Propaedeutics	60	60	15	15	6	156	1:1.59
Total	965	515	75	156.5	94	1805.5	1:0.87

Students gain experience through summer practice in 4th and 5th years

Students receive training in surgery during only one year, with anaesthesiology and radiology being taught within this surgery course. Practical teaching in this subject is carried out in groups of 8 - 10 students. There are insufficient staff to supervise students properly for surgical work.

There is no apparent collaboration with the clinics or clinical departments in the teaching of pharmacy and pharmacology.

Clinical Services

A system has been started from 1992, and has a staff consisting of the Head of Services, a secretary and a laboratory assistant. The Head of Department and secretary are members of the teaching staff of the Faculty).

The Faculty opened an equine clinic at the beginning of 1996, which since has seen about 20 horses.

The clinical services have a reception room and a waiting room. The rest of the facilities (consulting room, laboratories, hospitalisation and equipment) are parts of the different departments which collaborate with the clinical services. Two Associate Lecturers from the mobile clinic are included in the staff listed in Table 5.4. One is an equine practitioner, the other bovine.

There are some health and safety problems in the clinical area; there is only a limited venting system, and the scrubbing-up area has normal taps.

The clinics are deficient in equipment. The X-ray is inadequate, especially for large animals. The team was told that several items of essential equipment were paid for by staff taking on extramural activities in their own time because the resources provided by the University were inadequate for funding such purchases.

Mobile Clinic

The Faculty has two vehicles that it uses for the mobile clinic with 7 and 9 seats respectively. There are also trailers for animals or animal material.

The mobile clinic makes 1 visit a week during term time; on average, the mobile clinic operates for 12 hours per academic week. It makes about 30 farm visits in the course of the year, and sees about 600 animals of different species.

Students attend the mobile clinics in groups of 5 for 1 day of 8 hours during the epidemiology course. If there are spare places in the vehicle, they can attend additional sessions.

Consultations

The Murcia region has a significant number of pigs and small ruminants. Consultations take place for 30 weeks of the year, from 10:00 to 14:00 for five days of the week. The clinical services are closed during the holiday periods, and take consultations only.

Approximately 1000 cases were seen at the clinics in the past year. The team was told during the visit that approximately 600 cases were passed to the surgical department. Approximately 25% were primary cases, with 75% being referrals.

There is no structured emergency service or 24-hour care. There are however no residents or interns to provide the backbone of such a service.

The animal material seen by the Faculty and seen by the mobile clinic is detailed in Table 5.6. The numbers of analyses carried out within the Faculty are indicated in Table 5.7.

Table 5.6: Number of animals seen at Murcia (1993 - 1995)

		Consultations			Hospitalisations			Autopsies			mobile clinic
		1995	1994	1993	1995	1994	1993	1995	1994	1993	1994
Farm animals	Cattle	4	3	4	4	3	4	1	0	2	100
	Horses	7	3	4	5	3	4	0	0	1	90
	Small ruminants	47	70	31	47	70	31	50	60	63	150
	Pigs	355	309	260		2		19	27	6	170
	Other farm animals	31	20	1	21	20	1	15	18	16	80
Pets	Dogs	893	824	645	37	29	10	25	24	16	
	Cats	220	206	135	28	18	10	8	4	3	
	Other pets	28	29	10	31	20	1	22	24	13	

Table 5.7: Number of diagnostic analyses at Murcia Veterinary Faculty in 1994-95

Analysis	
Bacteriological	23
Virological	14
Serological	380
Biochemical	870
Parasitological	158
Haematological	885
Histological	84
Toxicological	5
Mycological	2
Nutritional	0
Other	0

Comments

Clinical Teaching

The team entirely endorses the strong criticism of the facilities for clinical teaching made in the SER.

There are insufficient staff to cover all areas and activities of undergraduate and postgraduate training. The present staff have to concentrate almost exclusively on undergraduate training. The lack of support staff in particular is a major deficiency, and means that the academics have to perform nearly all of the work that could be left to laboratory or technical assistants, as well as teaching and clinical work. Moreover, there is a general shortage of animal material for teaching surgery, and an imbalance between the types of animals received.

Students do not have early experience in animal handling. This limits their ability to take on extra work, such as emergency service/post-operative care, or summer work, where basic experience is necessary. The surgery staff in the clinics also felt that it would be more appropriate to spread the surgical training over the last two years of the undergraduate course.

The practical clinical training is generally marginal, representing less than 10% of the course hours in this area. More particularly, the practical clinical training in the fields of anaesthesia, obstetrics and radiology is inadequate in terms of the EEC directives.

Mobile Clinic

This relatively new development will help the teaching programme by increasing the number of clinical cases. However there are insufficient staff engaged in this activity, and the range of expertise is too narrow. The two associate lecturers that comprise the mobile clinic are a bovine and a horse practitioner, whilst the principal livestock in the Murcia area are pigs and small ruminants.

Consultations

The clinical service only operates for 150 days a year, which is low in view of the increasing numbers of cases for consultation and hospitalisation in the area.

The number of animal hospitalised is also very low, and the current premises are inadequate for even this level of activity.

The procedures of the Faculty Board whereby funds are allocated to the clinics for the purchase of new or replacement equipment appear to be failing. Clinical staff felt that many private practitioners had better facilities than they could provide, and that they were being surpassed in even relatively simple fields.

Commendably, the equine clinic has seen emergency cases outside normal hours when necessary. However, this has to be done in the personal time of staff with an already heavy workload, and does not make up for the lack of emergency service and 24-hour care.

There is a lack of consultation in large animals in comparison with the higher numbers of small ruminants, pigs and companion animals.

The autopsy room is well organised and equipped. However, the number of autopsies is exceedingly low, and covers only the teaching programme (2 sessions of 4 hours) of this course, which is itself barely sufficient to provide proper training. There is an insufficient number and range of autopsy specimens to improve the ability of the students to make diagnoses, or confirm the clinical diagnosis.

The new equine clinic should increase the caseload of horses.

The team noted that video sessions are normally counted as 'practicals'. If available to students, relevant video footage has a useful role in reinforcing 'hands on' practical training, but the team would not consider it to constitute practical training in itself.

Suggestions

The present clinical facilities are inadequate to permit the caseload necessary for clinical training to the required level, and should be improved.

The staff of the clinics must be increased to meet the needs of a well-organised undergraduate programme and to extend postgraduate training and research.

The clinical service and mobile clinic staff should be more oriented to the important livestock in the area, i.e. food animals.

The operation of the mobile clinic should be expanded to increase the number of visits and the animal material seen by the students.

The organisation of summer practice, which is viewed extremely positively by students, should be improved and made compulsory for 4th year students (see also section 9.6).

The clinical services should be expanded to operate all year round, and have proper facilities and staff to allow for the hospitalisation and post-operative care of animals e.g. on-site beds to enable 24-hr services. It would also benefit and enhance the Faculty to develop an emergency service. It would be both useful and beneficial for students to participate in these activities to give them more case responsibility and experience.

The diagnostic skills of students would be enhanced by more autopsy work on production animals. Consideration should be given to enhancing the training of the student through 'cadaver surgery' on autopsy or euthenised animal material. The post-mortem caseload of production animals should be increased by collecting carcasses from the surrounding farms. Small animal material could readily be collected from local practitioners.

The structure of practical courses should be reviewed (see section 9.3).

The Pathology Unit diagnostic service to local practitioners should be made more responsive.

In general, relationships between the Faculty and practitioners need to be improved. The Faculty should aim to build up its diagnostics, referral and emergency services in support of the local practitioners. A means needs to be found to ensure that the Faculty does not take the primary cases of practitioners who make referrals to the clinics.

The clinical teaching needs to be widened to encompass avian species and small mammals, i.e. poultry and rabbits, which are economically important species in the area. As they are in effect food animals, clinical teaching should incorporate a strong element of disease control and food hygiene.

5.4 Food Hygiene

5.4.1 Findings

Table 5.8: Food hygiene subjects taught

	Lectures	Practical work	Total	Ratio of lectures to practical work
Inspection and control of animal foodstuffs or foodstuffs of animal origin	120	60	180	1:0.5
Food hygiene and technology Practical work	120	60	180	1:0.5

Food hygiene is not always the most popular subject for veterinary undergraduates but the obvious interest and enthusiasm by the staff for their subject stimulates students for this topic. It does however appear that various parts of the required teaching are delivered from different parts of the course.

Food Technology

The teaching unit is located in the Veterinary Faculty. The facilities are also used by other institutions of the University of Murcia that are active in this field, limiting the physical space available for practical veterinary training. There appears to be a lack of equipment for practical classes. The food technology pilot plant, which has been supported by EC STRIDE funding, is only partially complete, and not available for teaching.

Bromatology and Food Hygiene

The theoretical training is supported by practical training and a programme of visits and field practice. In order to carry out practical training the Faculty relies upon the collaboration of veterinary inspection services from the Health Council of the local government. Students and teaching staff visit slaughterhouses, fish warehouses, and other centres to watch veterinary inspection.

While the location of the unit is good, there does appear to be a lack of infrastructure to support practical teaching. At the time of the visit, materials, e.g. culture plates, necessary for food hygiene teaching were not available at this part of the centre. The visits to outside premises, which depend upon extra-mural teachers, highlight the fact that the number of staff is largely insufficient to support practical teaching.

5.4.2 Comments

There is a requirement to provide adequate knowledge of the hygiene and technology in the production, manufacture, and distribution of food of animal origin. To teach this subject satisfactorily there must be a greater interface between teaching of the relevant subjects and disciplines.

In parts of the course, a lack of coordination both within and between topics results in important detail being missed. There is also some evidence of duplication in teaching and an inappropriate emphasis in some subjects when referring to food hygiene.

The requirements for physical inspection of meat is clearly defined in legislation but it is also necessary for all students to visit working abattoirs to fully understand the principles of hygienic conversion of live animals or birds to meat. This has particular relevance to the undergraduate being able to understand the use of a "risk assessment" approach to food hygiene e.g. HACCP concept.

Existing links with a major, and very high throughput, plant for processing pigs is of great value, but covers only one species. The slaughter and dressing practice for other animal species and birds is quite different, and also has different and distinct zoonotic implications. Attendance at a local multi-species abattoir helps to provide a balance across the species.

It is disappointing that there is little current research in the area of veterinary food hygiene, as a strong teaching course would be supported from such research activity.

The concentration on pigs in the Faculty is understandable in view of the predominance of pig production and pig meat processing in the Murcia region. However, the undergraduate course must adequately prepare students for employment throughout Spain and the rest of Europe.

5.4.3 Suggestions

There must be better integration of teaching of food-related issues.

One option which merits early consideration would be the joining of food technology with food hygiene.

This would immediately bring together related interests to provide a strong basis for developing the teaching and research in food hygiene.

Urgent consideration must be given to exposing the undergraduates to the practical slaughter and dressing of all species. This should include poultry processing, as well as a course of teaching in poultry breeding for both meat and eggs.

The requirements of food hygiene teaching must be included in the development of the Faculty Farm. For this subject to be taught successfully areas such as ethology and animal production, epidemiology and preventive medicine are of great importance.

Certain subject areas provide the base on which to build the teaching of food hygiene. The order in which subjects are taught should be carefully considered in the development of the new curriculum, with proper account taken of the needs of the subject of food hygiene.

The pilot plant should become operational as soon as possible (see section 4.6).

6. LIBRARY AND EDUCATIONAL RESOURCES

6.1 Findings

The library of FVM is apart of the library of Murcia University and is governed by the **Committee for Research and Library** chaired by the Dean or Vice-Dean of Research and containing representatives of the teachers and students. The library is well positioned and the opening hours are 09:00 - 21:00 Monday to Friday, with the exception of August. Use and loan of journals, periodicals and books is organised by the "Rules of Veterinary Library". Loan by a loan card is possible over the weekends and holidays. There is an interlibrary loan service.

There are 4 full time employees. The library has no computerised document search system for students.

If Departments wish to have a specific journal, it is generally necessary that they purchase it from their own resources, if they cannot get a free copy from elsewhere.

The University is planning to centralise the library facilities on the Espinardo Campus, which is giving rise to unease amongst the staff at the FVM.

There is no audio-visual or computer department in the FVM, nor is there a central computer room for students. There was no evidence of any material for self-teaching.

6.2 Comments

The team noted that the students had no access to recent international journals in the library. Although there are two reading rooms with 222 seats for reading, the seats in the library were occupied by students, from other Faculties as well as from the FVM, working on their notes from didactic teaching. The team observed that students rely on their notes instead of text books. This general tendency might be partly attributable to the lack of specific veterinary resources, so that individual students do not purchase text books and rely upon the library and photocopying to redress this deficiency.

The library appears to lack almost all the major international veterinary journals.

Self-teaching (e.g. computer based learning) may be an appropriate way for the Faculty to take some of the teaching load from staff and improve the training of students.

If the Faculty of Veterinary Medicine moves away from didactic teaching towards more self-learning, students will have to make more frequent use of the Faculty Library than at present. In this context, the plans for centralising the Faculty Library with others on the Campus give grounds for concern.

6.3 Suggestions

Space should be made available in the Faculty for a reading/working room for veterinary students, so that the seating in the library can be used for genuine library purposes.

The Faculty should assess the resources for self-teaching that are available in other Faculties in Spain, with a view to introducing such material as modules in the Murcia course.

The Library should routinely receive more international journals and periodicals, and reduce the Faculty's dependence upon material received as donations or scientific exchange.

The proposed centralisation of the Campus libraries should take proper account of the modernisation of teaching methods at the Veterinary Faculty. Students will need frequent and easy access to self-learning materials, and adequate working space for private study.

7. ACADEMIC TEACHING AND SUPPORT STAFF

7.1 Findings

Table 7.1: Academic and support posts in Departments

Department teaching unit	Full Prof.	Uni. Lect.	Assist. Lect.	Assoc. Lect.	Grant Holder	Admin. staff	Lab. staff	Total
Anatomy, Pathologic Anatomy and Food Technology						1	3	23
Embryology & Anatomy	1	4	1					
Histology & Pathologic Anatomy	1	4			1			
Food Technology	1	1	1		4			
Animal Biology						1		9
Animal Biology	1	2			1			
Animal Physiology	1	1	1		1			
Biochemistry and Molecular Biology						1	1	11
Chemistry and Biochemistry	1	6			2			
Physics Department						1		2.5
Applied Physics	1	0.5						
Applied Maths & Stats Department						1		3
Mathematics and Biostatistics		2						
Animal Pathology						1	4	40
Infectious Diseases	1	2			3			
Microbiology and Immunology	1	3			1			
Parasitology & Parasitic Diseases		1	2					
Medical and General Pathology	1	5	1					
Surgery and Radiology	1	1	1	2				
Reproduction and Obstetrics	1	2			6			
Animal Production						1	1	17
Agriculture & Agrarian Economy		4						
Ethnology and Animal Production	1	2	1					
Genetics and Animal Husbandry	1	2			1			
Animal Nutrition and Feeding	1	1	1					
Socio-Sanitary Sciences						1		13
Bromatology and Food Inspection		2	1		5			
Pharmacy, Pharmacology and Therapeutics		1	1					
Toxicology, Vet. Legislation and Deontology		1	1					
Total	15	47.5	12	2	25	8	9	118.5

Of the 77 teaching staff, 63 have tenured positions, and 14 are in non-tenured posts.

The teaching staff-student ratio for undergraduate training is 1:10.5 (77:810). The ratio of support to teaching staff is 1:4.5 (17:77).

Associate lecturers have their main jobs outside the Faculty, and give about 3 - 6 hours a week in support of teaching, usually in 'specialised' areas (e.g. bovines).

Staff spend approximately 40% of their time on teaching, 40% on research, and 20% on administration.

The average age of staff at the Faculty is relatively low.

The number of staff with tenure has been steadily rising over the past decade, following a 1986 law intended to stabilise staff posts with respect to teaching needs.

As outlined elsewhere (section 2.2) Departments do not have autonomy with respect to using their own resources to engage extra staff. The team has received differing accounts from the Departments and the University as to the ease of using resources in such a way.

7.2 Comments

The Advisory Committee on Veterinary Training (ACVT) recommends a target student-staff ratio of 5:1 and a support staff-teaching staff ratio of around 2.5:1.

The poor ratios of staff to students and teaching staff to support staff militate against teaching and research work. Due to the large number of students per teacher, research activities are limited and student training is restricted.

There is a chronic lack of support and technical staff throughout the Faculty, which limits the efficiency of the Faculty in many areas. There is a particular deficiency in areas where there is a need for animal handlers. There is a risk that this shortage will be exacerbated if the new hospital and Faculty Farm are constructed without making any provisions for the personnel required to staff and service their functioning. Academic staff have to undertake many of the tasks normally carried out by such workers, which is an inefficient and uneconomic use of their time. The Faculty has no way of resolving this shortage, even if Departments have their own resources to pay for additional staff, as only the University can employ personnel.

The staff in the clinics in particular are overworked, as in addition to taking on a teaching role, they are expected to operate the clinics, perform clinical work and provide emergency cover. In addition to these tasks, they must undertake supplementary external work, such as courses, in order to purchase equipment and fund clinical teaching activities.

In other EU countries there is a move away from tenured posts.

7.3 Suggestions

The University must urgently address the chronic shortage of support and laboratory personnel which is seriously impairing the teaching, research and clinical activities in the Veterinary Faculty. It is imperative that this deficiency be rectified where new facilities are being built, for instance the new hospital and clinics. It is illogical to provide new facilities without ensuring that there are adequate staff to run them properly.

The University must clearly set out the procedures and conditions whereby a Department can take on additional staff paid out of their own resources. If these are not operating properly in practice, they should be rapidly modified. However, staff paid for from departmental resources should in no way be viewed as a substitute for having a proper complement of well-trained technical and support staff on the main University budget.

8. ENROLMENT AND ADMISSION REQUIREMENTS

8.1 Findings

The admissions and the number of students in each year are tabled below:

Year	1995	1994	1993
	118	124	129

1st year	2nd year	3rd year	4th year	5th year	Total
118	155	159	159	219	810

The majority of students are admitted after having followed the Pre-University Course (COU) option B (Biosanitary) at school and passed a selection examination. There is also an access reserved for persons of over 25 years who have not undergone secondary education and not been to University. 5% of the places are reserved for students who already have a degree (*sic*). The University council decides each year how many first-year students should be enrolled.

Admission to Universities is regulated by the Royal Decree 1005/91 of 14th June.

In 1994/95, 118 students were accepted from 434 applications (1 for every 3.6 applying). Around 57% of the students are girls, and roughly half of the students come from outside the region of Murcia.

The average duration of the veterinary course is 6.6 years.

8.2 Comments

The recruitment and the level of candidates is satisfactory. The policy of concentrating on quality not quantity in undergraduate teaching is commendable.

The team supports and commends the efforts by the Faculty to reduce the number of students that it accepts each year, in order to improve the staff-student ratio and to permit the Faculty to achieve its objective of concentrating on quality rather than quantity in undergraduate education. A comparison of veterinary faculties across the EU indicates that a staff-student ratio of 1:5 should be adopted as a target figure.

The average duration of studies is 6.6 years, as a student can attempt to pass each subject 6 times, and can carry over subjects from year to year. This explains the large number of students who are in the final year of study. Each department has 'internal students', who participate in research and teaching activities once they have passed the courses in the discipline to which they are affiliated.

8.3 Suggestions

The Faculty should continue its policy of reducing the number of places on the course until the desired balance between the number of students and the resources available for teaching them has been achieved.

9. A. CURRICULUM

9.1 Findings

Veterinary studies at Murcia University follow a five year course. All EEC subjects are compulsory. The time allocated to theoretical and practical teaching is summarised in Tables 9.1 and 9.2 on the following pages.

Table 9.1: Teaching hours in EEC subjects

	Lectures	Practical work	Tutorials	Clinical work	Other	Total
A. BASIC SUBJECTS						
Physics	90	60				150
Chemistry	90	60				150
Animal biology	72	36	3			111
Plant biology	48	24	1			73
Biomathematics	120	60	77			257
B. SPECIFIC SUBJECTS						
Group 1: Basic sciences						
Anatomy (including histology and embryology)	270	210	30			510
Physiology	120	60	4			184
Biochemistry	120	60				180
Genetics	60	30	7			97
Pharmacology	55	29				84
Pharmacy	10	2				12
Toxicology	54	18	6			78
Microbiology	80	40				120
Immunology	40	20				60
Epidemiology	13	4				17
Professional ethics	18	6	2			26
Group 2: Clinical sciences						
Obstetrics	10	3		2		15
Pathology	180	120	15	15	7	337
Parasitology & parasitic diseases	120	60	3			183
Clinical medicine and surgery (inc. anaesthetics)	105	23	21	40		189
Clinical lectures on domestic animals, poultry and other species	290	184	15	47.5	80	616.5
Preventative medicine	15					15
Radiology	15	5		10		30
Reproduction and reproductive disorders	85	23		27		135
Vet. state medicine and public health	12	2	4		1	19
Vet. legislation and forensic medicine	18	6	2			26
Therapeutics	55	29				84
Propaedeutics	60	60	15	15	6	156
Group 3: Animal production						
Animal Production	84	42				126
Animal Nutrition	90	60			6	156
Agronomy	60	60			6	126
Rural economics	60		60		6	126
Animal husbandry	60	30	7			97
Vet. hygiene	36	18				54
Animal ethology and protection	25	10				35

Group 4 Food hygiene							
Inspection and control of animal foodstuffs or foodstuffs of animal origin	120	60					180
Food hygiene and technology Practical work	120	60					180

Table 9.2: Distribution of practical and theoretical teaching in EEC subjects

	Hours in course					Total	percentage of total course hours	Ratio of lectures to practical work
	Lectures	Practical work	Tutorials	Clinical work	Other			
Basic subjects	420	240	81			741	14.8	1:0.76
Basic sciences	840	489	49			1378	27.6	1:0.64
Clinical subjects	965	515	75	156.5	94	1805.5	36	1:0.87
Animal production	415	220	67		18	720	14.4	1:0.74
Food hygiene and technology	240	120				360	7.2	1:0.50
Total	2880	1584	272	156.5	112	5004.5	100	1:0.74

The Faculty is at present preparing a new curriculum; a Curriculum Committee is in charge of this work. The SER and this report are based on the existing curriculum.

9.2 Comments

In discussions with students, they said that there was a relatively low drop-out rate from the Faculty, despite the examination structure.

There is poor coordination and integration of teaching within the curriculum, leading to gaps in some areas and overlap in others. It is hoped that account can be taken of the following suggestions in the revised curriculum.

9.3 Suggestions

The amount of theoretical teaching should be decreased and the number of practical sessions, particularly clinical training, be increased. There should be a greater emphasis on self-learning.

Students should be given a graduated exposure to practical work with animals through the entire five year course. This should start with structured early courses on animal handling, care and husbandry to enable first cycle students to act as clinical assistants and take part in summer practice. This practical courses should continue with basic clinical techniques to prepare students for intensive work in different clinical areas. Some of this could be effectively provided by a structured extra-mural programme.

The coordination of teaching within the Faculty should be improved (see Section 2.3).

9. B. EXTRA-MURAL STUDY

9.4 Findings

There is currently a voluntary system for 4th and 5th year students to gain experience through working with practitioners or in industrial or administrative placements in the summer vacations.

1st cycle students are not permitted to take part in the placements system.

9.5 Comments

The summer practice was viewed very positively by the students of the Faculty. They did, however, say that the organisation of the placement system could be improved, and that many students organised their own summer practice for this reason.

Extramural work of the type used in Murcia provide an excellent support to the teaching within the Faculty, and must be encouraged. Extra-mural studies have particular relevance to practical experience in clinical, food hygiene and animal production subjects. For example, placements on farms during a period of lambing, farrowing or calving provide a lot of experience in a short space of time.

Extra-mural work, like all practical training, should start earlier in the course. Rather than not being permitted to do such work, 1st cycle students should be encouraged to gain such experience, even if it is only basic work in animal handling and care.

9.6 Suggestions

There is a need for a better structure to the extra-mural study, with a view to making such placements an integral part of the training. Aims and objectives for such placements should be established, and an assessment of the value of a particular placement to the overall training of the student carried out. This will be heavy on staff time to supervise properly, but should nonetheless be further developed.

The Faculty should extend the catchment area of the system so as to provide placements in the home area of students from outside the region of Murcia.

The team recommends that the links with private practitioners (see also section 1.5) and industry be strengthened and expanded to develop extramural studies. Formal and regular meetings with representatives of local veterinary practices should be used to develop a valuable potential source of practical training.

9. C. EXAMINATIONS

9.7 Findings

Students must pass written examinations in all obligatory EU subjects, which are held in September, December and June/July. The first opportunity for a student to take examinations in a subject is on completion of the course in June/July. If the student fails this examination, then he/she can elect to retake the examination in September. Students who do not pass the examination, must reregister and pay new fees, either for that subject, or for the full year of courses.

The registration fees from students are not paid to the Faculty or its Departments, but are paid into the general budget of the University.

A student may elect not to sit the examination in June/July or in September. In this case, he or she may sit the examination in December, although he/she will have to pay the registration fees for the course or year. A student who has failed the examinations in both June/July and September may not then resit the examination in December. Students can repeat an examination up to six times.

A student who reregisters for a course may have to reattend practicals, depending on the particular subject. Attendance at lectures is not obligatory for any students at any stage.

There are also partial examinations in some subjects during the course itself. Depending upon the individual topics, a student who achieves a high mark in such test need not take that module in the final examinations.

Some subjects have practical examinations which must also be passed before a student can complete that course.

Students must attend all practicals. There is a recording system, including verification, for obligatory sessions.

9.8 Comments

There is a high failure rate in many subjects, and it would appear common among students to have examinations outstanding in one or more subjects from previous years. As they must re-register for these subjects, many such students who are enrolled on courses never attend lectures or practicals. Students expressed concern that the pass level in subject examinations seemed inconsistent from year to year.

9.9 Suggestions

As the curriculum is being updated, it would be an appropriate time to review the examination system. A system of external examiners should be introduced, although it is reported that this raises legal problems. External examiners would provide an objective measure of the examination system and the performance of students and would also facilitate cooperation and coordination between the Faculty and other veterinary schools.

The Faculty should also establish an Examination Board to provide an independent and objective assessment of the pass mark.

10. CONTINUING EDUCATION AND POSTGRADUATE WORK

10.1 Findings

Continuing professional education is organised by the practitioners themselves. University staff may participate as lecturers, but there is otherwise not a great deal of input from the Faculty.

10.2 Comments and Suggestions

The team considers that links with the profession in the area of continuing professional education should be improved. This could be one of the roles of the forum for Faculty-Practitioner relations that has already been referred to in section 1.5 of this report.

11. RESIDENTIAL AND HALL (UNIVERSITY) POSTS

11.1 Findings

Each department has 'internal students', who participate in research and teaching activities once they have passed the courses in the discipline to which they are affiliated. These are referred to as "interns" in the SER.

There is no formal programme of residents.

11.2 Comments

'Interns' is understood to denote recent graduates who join a Department for a term of at least one year, effectively as a junior training fellow.

'Residents' are graduates who have left the University environment for a number of years, and return to act as senior training fellows, usually for two to three years. During this time, it is expected that they will achieve some level of specialisation.

None of the students referred to in the SER appear to meet these criteria.

11.3 Suggestions

The Faculty should establish a system of interns and residents, particularly in order to support research and clinical activities.

12. RESEARCH

12.1 Findings

A unit has to have at least three full-time academic or research positions before it can tender for competitive research grants. An application generally comprises submissions from the individual and department involved, as well as the University, and are made in response to calls from a range of funding bodies. The most important of these is the National Ministry of Education and Science, but local governments, regional development agencies, the European Commission, and the University also fund research activities in specific areas at certain times.

The University takes 10% of each research grant, plus 16% VAT; the remainder goes to the project. The project leader has the authority to use this money for staff, including support staff, and materials, but only for the project.

At University level, one of the Vice-Rectors is specifically responsible for research. At the Faculty there is a Committee for Research and the Library, and a total of 19 separate research teams.

12.2 Comments

A track record of research is vital for the success of research proposals, which makes obtaining funding for research activities and posts difficult in this relatively new Faculty. Once a department has successfully started a research activity, obtaining further grants becomes progressively easier. The field of work of a department and its commercial value are also important factors in determining whether or not it can initiate research.

Despite the existence of a Research Committee, the team found no evidence of any overall planning of research within the Faculty, or between this and other Faculties. The present system of obtaining research grants is not supportive of teaching activity in the veterinary Faculty.

The team was disappointed by research at the FVM, which it understands is the responsibility of the University. In reflection perhaps of the large numbers of independent Teaching Units, research is scattered over a wide range of small topics. On the whole, research work consequently lacks breadth and depth. The amount of FVM research published in major international journals is low. In the team's view, the Faculty is not achieving its full research potential.

Reference has already been made elsewhere in this report to some uncertainty, that needs to be resolved, about the principles and procedures for financing additional temporary staff from research contracts. When the team raised this matter with the Rector and Vice-Rectors, it was informed that there should be no problem about recruitment of such additional staff.

This issue may be linked to the unofficial practice - as reported to the team - of research grants being used to support teaching activities that are inadequately funded from the main budget.

Whilst the team welcomes existing links with industry, and the continuing efforts to enhance these relationships, this should not detract from efforts to obtain mainstream grants.

12.3 Suggestions

There should be a Faculty policy and strategy for guiding, coordinating and evaluating research activities. To this end, a specific committee should be formed within the veterinary Faculty, either within the existing Research Committee or in addition to it, to **actively address the issue of grant applications**. This committee must coordinate research efforts, and encourage relevant workers from different units to work together to submit **joint proposals**. It will be necessary for this committee to identify areas of current expertise within the Faculty, and consider areas in which expertise could be developed to improve the research rating of the Faculty.

More support staff are needed to assist with research activities as well as to lighten the load on academic staff.

The funding of research needs reviewing (see section 3.3).

CONCLUSIONS

The University of Murcia is to be congratulated on the physical provisions that it has made available to the Faculty of Veterinary Medicine.

The Faculty buildings are modern, and on the whole spacious enough for the purpose of veterinary training. They are situated close to other faculties of professional relevance to veterinary training. The location of the Faculty facilitates access to both companion animal and production animal material. Moreover, if the team is correctly informed, the University - together with the Regional Government - supports the rapid completion of the new Farm, hospital, clinics and pilot plant for food technology. All of these offer considerable possibilities for further improvements to undergraduate teaching at the Faculty.

Internally, the Faculty has a number of characteristics that are important for future development. The average age of the teaching staff is low. Students seem well motivated, and appear to have a good relationship with the academic staff. There is a commendable policy of reducing student intake to enable the Faculty to concentrate on quality rather than quantity in its undergraduate teaching. Again the University is to be congratulated for the support that it has given to the Faculty in this matter; politically, it can be a difficult policy to pursue, but one that should be adopted by many other European veterinary teaching institutions.

Inevitably, as with all faculties, there is room for improvements. Some lie within the responsibility of the Faculty; others are in the hands of the University.

Basically, the team considers that the Faculty is performing below its true potential. This is most evident in the clinical areas, where part of the training is below that required by the EC directives. In a sense, this is one of the easier problems to resolve. The present clinical facilities are inadequate. More space is needed; this will be forthcoming when the new clinics and hospital are available. Those facilities must, however, be properly staffed and equipped.

The imbalance between theoretical and practical teaching in almost all subjects should be addressed if the full potential of the Faculty is to be achieved. A reform of the curriculum is underway. That reform should not only reduce the amount of theoretical teaching; it should also aim to change teaching methods at the Faculty. More responsibility should be placed on students through directed self-learning, and through much wider practical experience, for instance by exposure to handling animals early in the course and by obligatory participation in 24-hour cover from their third year. Such changes present challenges to the academic staff also. The team is confident that most of them will respond to the challenge.

Under-performance is also evident as regards obtaining animal material for teaching purposes. Lack of hospitalisation facilities and staff restricts the number of cases that the clinics can accept for certain operations, but the case load of single day treatments could be improved prior to the move to the new premises. Much more effort should be made to obtain necropsy material; the figures for some species are far too low for a Faculty with the favourable geographical location that Murcia enjoys.

There is one aspect of its training where the Faculty needs to be more outward looking. In an area dominated by pig production it is understandable that the Faculty should concentrate on that species. However, the Faculty is not training students for employment solely in the region of Murcia. Its graduates should be able to compete professionally throughout Europe in a range of species. The new Farm should be actively used to help them to do so.

Research is another area of under performance, and an underlying reason for this is a structural weakness within the Faculty as a whole. Research is fragmented largely because the Faculty is fragmented. The twenty or so teaching units can function independently if they so wish. This report has criticised a similar lack of integrated effort between units in the teaching of certain subjects.

The solution to this issue lies mainly in the hands of the University. Only the University has **the power to introduce greater cohesion of effort within the Faculty**, either by intervening directly or by finding ways by which the Dean and his team can be given more managerial authority than is the case at present. The existing Faculty Board is too large to be an effective managerial tool for ensuring that units integrate and cooperate more closely in undergraduate teaching and research. The Faculty also needs more flexibility and authority on matters such as the number and deployment of support staff and the purchase of adequate equipment. Both are matters where decisions taken by the wrong people in the wrong place can cause the Faculty to function below its true potential.

The devolution of responsibility could help to overcome some of the misunderstandings or misrepresentations that seem to arise from the present managerial structure. The team received a steady flow of complaints about the alleged inability to employ short contract staff paid for by outside funds, and about excessive slowness and uncertainty in obtaining approval for the purchase of basic and necessary equipment. If communications on such matters are a problem in the present structure, it would be beneficial to shorten the lines of communication.

The team appreciates that the present structure of relationships between University, Faculty, Departments and Units is common in Spain, and that there may be little room for manoeuvre. It urges the University, however, to make maximum use of whatever flexibility exists within the rules to devolve more managerial responsibility onto the Faculty. The team hopes that the recent major political change in Spain, whereby authority has been devolved from central Government to the Regional Government of Murcia, will produce a local climate of change from which the Veterinary Faculty can benefit.

Given its fundamental strengths of location, premises, future building programme, staff and low student intake, the Veterinary Faculty of Murcia should be confident about its future. Within the foreseeable future one of its major weaknesses - its clinical training - can be rectified by the new hospital and clinical facilities. Under performance by the Faculty, arising partly from managerial weaknesses, need to be addressed. With goodwill, it should be possible to rectify them.

SUMMARY OF SUGGESTIONS

1 Suggestions which, if not implemented, could prevent the teaching given by the University conforming to that set out within Directive 1027 78 and its appendix.

(5.3) The present clinical facilities are inadequate to permit the caseload necessary for clinical training to the required level, and should be improved.

2 Suggestions whose implementation does not effect the conformity of the teaching at the University with Directive 1027 78 and its appendix.

(8.3) The Faculty should continue its policy of reducing the number of places on the course until the desired balance between the number of students and the resources available for teaching them has been achieved.

Organisation

(2.3) The size of the Faculty Board makes it an unwieldy body for constructive and focused discussion, and mitigates against effective decision-taking. It should be scaled down, and more executive power given to a 'Deans Team' of less than one tenth the size of the present Faculty Board.

(2.3) The University should review, and modify as necessary, the mechanisms governing the allocation of resources.

(5.1.1) The request by the staff of the mathematics unit to be located in the veterinary faculty should be granted.

(5.1.2) The basic science departments should be grouped together to improve coordination in teaching.

(2.3) A student body should be established to raise issues relating to the welfare of students at the Faculty. This should be in addition to the existing 3 students organisations.

(12.3) There should be a Faculty policy and strategy for guiding, coordinating and evaluating research activities. To this end, a specific committee should be formed within the veterinary Faculty, either within the existing Research Committee or in addition to it, to actively address the issue of grant applications. This committee must coordinate research efforts, and encourage relevant workers from different units to work together to submit joint proposals. It will be necessary for this committee to identify areas of current expertise within the Faculty, and consider areas in which expertise could be developed to improve the research rating of the Faculty.

(1.5) A practitioners-Faculty liaison committee should be established. As well as improving contact between groups with many common interests, such a structure could provide valuable feedback on the quality of, or deficiencies in, the teaching of recent graduates and extramural students i.e. an independent view on how well the teaching is meeting its primary objective.

(9.6) The links with private practitioners and industry should be strengthened and expanded to develop extramural studies. Formal and regular meetings with representatives of local veterinary practices should be used to develop a valuable potential source of practical training.

Staffing

(7.3) The University must urgently address the chronic shortage of support and laboratory personnel which is seriously impairing the teaching, research and clinical activities in the Veterinary Faculty. It is imperative that this deficiency be rectified where new facilities are being built, for instance the new hospital and clinics. It is illogical to provide new facilities without ensuring that there are adequate staff to run them properly.

(7.3) The University must clearly set out the procedures and conditions whereby a Department can take on additional staff paid out of their own resources. If these are not operating properly in practice then they should be rapidly modified. However, staff paid for from departmental resources should in no way be viewed as a substitute for having a proper complement of well-trained technical and support staff on the main University budget.

(5.3) The staff of the clinics must be increased to meet the needs of a well-organised undergraduate programme and to extend postgraduate training and research.

(5.1.2) Each unit should have a suitably trained technician to prepare practical classes and to develop diagnostic services and support research.

(12.3) More support staff are needed to assist with research activities as well as to lighten the load on academic staff.

(11.3) The Faculty should establish a system of interns and residents, particularly in order to support research and clinical activities.

Financial Planning

(3.3) The unit funding should be increased to be compatible with the average levels in the EU countries.

(3.3) There should be no reduction in the overall funding imposed as a result of any further reduction in the student intake; a good ratio is a key element in ensuring quality in the veterinary training.

(3.3) The process by which funds are allocated needs to be revised to ensure that smaller departments are not marginalised by the larger units.

(3.3) Ways should be found for pump-priming research activities in different departments, to overcome the problems of obtaining grants for Departments with no research track-record.

Equipment, Facilities and Services

(4.6) Work on the Faculty Farm and hospital/clinics should be finished as soon as possible; these facilities are urgently needed for undergraduate training.

(3.3) The future capital developments at the Faculty, i.e. the farm, hospital and new clinics, should receive the funding for equipment, materials and staff, especially support staff, necessary for them to be operated effectively.

(4.6) The Farm should become a central part of undergraduate teaching at the Faculty. To this end:

- there should be a clear management structure for the Farm, which should be under the charge of a suitably qualified farm manager (e.g. a farmer or agronomist).

- the Farm should offer diverse activities. It should not be dominated by a single discipline or a single species, nor should it duplicate teaching that is already available elsewhere, for instance through the existing links with the pig operation and processing facility at El Pozo. The range of material at the Farm should be national and international, and not purely regional.

- the Farm should be provided with sufficient staff to fulfil its teaching role properly.

- 1st cycle students should be involved in the day-to-day tasks of running the farm, for instance feeding, grooming, "mucking out".

- the teaching at the Farm should be integrated, covering all aspects of animal and herd health, from reproduction, through nutrition, to food hygiene.

(5.2.3) The farm, whose primary role is for undergraduate teaching, should aim to cover diverse subject areas for a range of species. It should be managed by a general manager and directed by a small board composed of representatives from different Departments, such as the Departments of Animal Production and Animal Pathology.

(4.6) To justify the investment and to improve the clinical teaching the new hospital and clinics need to be provided with adequate personnel, including support staff. Some of the deficiencies evident in the present clinic should not be repeated, especially those of health and safety.

(4.3) The Faculty together with the clinical staff should conduct a review of the equipment needs of the clinics, firstly to agree the equipment to be installed in the new facilities and secondly to remedy in the short term some of the current shortcomings in the clinical facilities so that they can function and teach properly.

(5.3) The clinical services should be expanded to operate all year round, and have proper facilities and staff to allow for the hospitalisation and post-operative care of animals e.g. on-site beds to enable 24-hr services. It would also benefit and enhance the Faculty to develop an emergency service. It would be both useful and beneficial for students to participate in these activities to give them more case responsibility and experience.

(4.6) The pilot plant should become operational as soon as possible to enable students to make full use of these potentially excellent facilities as soon as possible. This will also enable research in this area to proceed.

(5.1.2) An exhibition hall for anatomy should be established to enable the permanent display of skeletons for the students and a larger 'bone room'.

(5.1.1) The apparatus for practical work in chemistry should be brought up to date.

(5.3) The Pathology Unit diagnostic service to local practitioners should be made more responsive.

(5.3) In general, relationships between the Faculty and practitioners need to be improved. The Faculty should aim to build up its diagnostics, referral and emergency services in support of the local practitioners. A means needs to be found to ensure that the Faculty does not take the primary cases of practitioners who make referrals to the clinics.

Curriculum and Course Structure

(9.3) The amount of theoretical teaching should be decreased and the number of practical sessions, particularly clinical training, be increased. There should be a greater emphasis on self-learning.

(2.3) The coordination and integration of teaching in the Faculty should be improved to ensure that all aspects of veterinary subjects are well covered without duplication. Some of the Departments should be reorganised to promote such integration, for example by grouping basic sciences within at most two Departments, and joining food technology with food hygiene.

(9.3) Students should be given a graduated exposure to practical work with animals through the entire five year course. This should start with structured early courses on animal handling, care and husbandry to enable first cycle students to act as clinical assistants and take part in summer practice. This practical courses should continue with basic clinical techniques to prepare students for intensive work in different clinical areas. Some of this could be effectively provided by a structured extra-mural programme.

(5.1.1) The biology course should be better coordinated with the teaching that students have received prior to enrolling at the veterinary faculty.

(5.1.1) The teaching of applied physics should be revised to reflect new technology.

(5.1.1) Biostatistics should be included in the future programme of 2nd cycle teaching (4th/5th year).

(5.1.2) The volume of histology teaching should be reduced to allow self-teaching by the students from material that is available within the unit.

(5.1.2) The teaching in pharmacy, in particular the practical work, should be increased, and coordinated with related topics in clinical sciences, animal production and food hygiene.

(5.2.3) Essential topics in animal production and nutrition should be coordinated and integrated with the teaching of clinical subjects. Coordination with food hygiene teaching is necessary for well-integrated training, "from stable to table".

(5.2.3) Herd health surveillance and control by computerised systems should be taught for all species in a well-equipped computer room.

(5.3) The diagnostic skills of students would be enhanced by more autopsy work on production animals. Consideration should be given to enhancing the training of the student through 'cadaver surgery' on autopsy or euthenised animal material. The post-mortem caseload of production animals should be increased by collecting carcasses from the surrounding farms. Small animal material could readily be collected from local practitioners.

(5.3) The clinical service and mobile clinic staff should be more oriented to the important livestock in the area, i.e. food animals.

(5.3) The operation of the mobile clinic should be expanded to increase the number of visits and the animal material seen by the students.

(5.3) The clinical teaching needs to be widened to encompass avian species and small mammals, i.e. poultry and rabbits, which are economically important species in the area. As

they are in effect food animals, clinical teaching should incorporate a strong element of disease control and food hygiene.

(5.4) There must be better integration of teaching of food-related issues.

One option which merits early consideration would be the joining of food technology with food hygiene.

This would immediately bring together related interests to provide a strong basis for developing the teaching and research in food hygiene.

(5.4) Urgent consideration must be given to exposing the undergraduates to the practical slaughter and dressing of all species. This should include poultry processing, as well as a course of teaching in poultry breeding for both meat and eggs.

(5.4) The requirements of food hygiene teaching must be included in the development of the Faculty Farm. For this subject to be taught successfully areas such as ethology and animal production, epidemiology and preventive medicine are of great importance.

(5.4) Certain subject areas provide the base on which to build the teaching of food hygiene. The order in which subjects are taught should be carefully considered in the development of the new curriculum, with proper account taken of the needs of the subject of food hygiene.

(4.6) The new clinics and hospital should aim to involve the students far more actively in the day-to-day care and running than they are at present. For instance, sleeping in on-site to provide post-operative care and 24-hour service all year round. It is necessary to provide more basic practical clinical training at an earlier stage in the curriculum for students to be able to take on an integral role in the new facilities.

(5.3) The organisation of summer practice, which is viewed extremely positively by students, should be improved and made compulsory for 4th year students.

(9.6) There is a need for a better structure to the extra-mural study, with a view to making such placements an integral part of the training. Aims and objectives for such placements should be established, and an assessment of the value of a particular placement to the overall training of the student carried out. This will be heavy on staff time to supervise properly, but should nonetheless be further developed.

(9.6) The Faculty should extend the catchment area of the extramural training system so as to provide placements in the home area of students from outside the region of Murcia.

(9.9) As the curriculum is being updated, it would be an appropriate time to review the examination system. A system of external examiners should be introduced, although it is reported that this raises legal problems. External examiners would provide an objective measure of the examination system and the performance of students and would also facilitate cooperation and coordination between the Faculty and other veterinary schools.

(9.9) The Faculty should also establish an Examination Board to provide an independent and objective assessment of the pass mark.

Library, computing and audio-visual services

(6.3) The proposed centralisation of the Campus libraries should take proper account of the modernisation of teaching methods at the Veterinary Faculty. Students will need frequent and easy access to self-learning materials, and adequate working space for private study.

(6.3) The Faculty should assess the resources for self-teaching that are available in other Faculties in Spain, with a view to introducing such material as modules in the Murcia course.

(6.3) The Library should routinely receive more international journals and periodicals, and reduce the Faculty's dependence upon material received as donations or scientific exchange.

(6.3) Space should be made available in the Faculty for a reading/working room for the students, so that the seating in the library can be used for genuine library purposes.